

STEAM VESSELS "SIRIUS," &c.

RETURN to an Order of the Honourable The House of Commons,
dated 8 April 1851;—for,

COPY "of the REPORTS of the Board of Trade Inspector, under the Act 9 & 10 Vict. c. 100, on the Loss of the Steamers 'Sirius,' 'Tribune,' and 'Fin MacCoul,' on the Coast of *Ireland*; of the 'Orion,' on the Coast of *Scotland*; of the 'Dumbarton Castle,' on the Coast of *England*; and of the 'Royal Victoria,' in the *Baltic*:—Also, any REPORT on the necessity of 'Systematic Supervision of Steamers,' and of the present State of 'Denoting Lights' on Board of Steamers."

Ordered, by The House of Commons, to be Printed, 8 August 1851.

"SIRIUS" STEAMER.

REPORT of Captain *Denham*, R.N., F.R.S., on the Wreck of the Steam Ship
"Sirius."

Report on the
Wreck of the
Steam Ship
"Sirius."

To the Right Honourable the Lords of the Committee of Council appointed for
the consideration of all matters relating to Trade and Foreign Plantations.

My Lords,

16 February 1847.

PURSUANT to instructions from your Lordships of the 3d instant, and warrant of authority under date of the 5th instant, I arrived in Cork on the 8th instant, and placed myself in communication with the managing director of the Cork Steam Ship Company, to whom the late steam ship "Sirius" had belonged, and concerning which I was authorized as above to inquire into, according to the provisions of an Act of Her present Majesty's, intituled, "An Act for the Regulation of Steam Navigation, and for requiring Sea-going Vessels to carry Boats," cap. C.

Having apprised the owners of the persons and documents I should require before me, after I had inspected the scene of the wreck at Ballycotton, 25 miles distant, in the vicinity of which, at a small town (Cloyne), I also desired to attend the meeting of magistrates appointed for the morrow, respecting the salvage claims upon the wreck in question, I proceeded to Cloyne, where my mission was most courteously recognised by the presiding magistrates, Thomas Bell and J. J. Roche, Esqrs., who, by inviting me to the Bench, enabled me to elicit many leading points to my subsequent inquiry as to the rescue of life, the protection and plundering of property.

At the above court of salvage claims I met the Solicitor to the Customs at Cork, the Superintendent of Ships' Equipments to the Steam Company, and the Comptroller of Customs, and Receiver of Droits at Cork, Mr. John Joyce, from whom I received most valuable information. Mr. Joyce accompanied me next morning to the actual scene of the wreck, the locality of which I surveyed trigonometrically, so as to lay down her exact position in reference to the whole contour of coast feature, and hence the conclusions as to how she got there? Were the best means resorted to for rescue of life and property? and how far coast lights might be demanded, or coast guard require strengthening at this particular station and region of several shipwrecks; all points to which general as well as local anxiety directed itself. I then took the depositions of the clergyman, the Rev. Maurice Hewson; the coast guard officer, Mr. Jeremiah Coghlan; the commissioned boatman of coast guard; and the next essential boatman's evidence of that establishment.

Report on the
Wreck of the
Steam Ship
"Sirius."

The actual residence, as well as duties of the clergyman and coast guard just quoted, being within half a mile of and close to the sea margin of the portion of coast where the wreck took place; and my being on the spot to interrogate, aided by their very recent impressions of a disaster which called forth their energies, means, and sympathy, I was soon in possession of their graphic depositions. Such were not only most readily afforded, but subsequently corroborated, and reflect honourably upon their services on the occasion.

My time being engaged as above up to the 12th instant A.M., I could not wait upon the Naval Commander-in-Chief (Rear Admiral Sir Hugh Pigot) at the Cove of Cork, until that day. The Admiral expressed his readiness to facilitate my duty in any way I could point out. I confined my request to that of his ordering the officer who commanded the "Myrmidon" steamer, which he despatched to the wreck, to give me a statement of what he observed, a request forthwith complied with, and I availed of this visit to Cove to confer with Commander De Courcy, of this district of coast guard, whom I had heard of as proceeding to the wreck, and who furnished me with the observations he had made. I also conferred with Lieutenant W. H. Church, R.N., of the Admiralty Coast Survey, who supplied me with his written opinion respecting a desired light upon Ballycotton Island.

Having by the morning of the 13th instant collected all the desired data, it was not necessary to summon any distant witnesses. I availed myself of the room at the Custom-house, which Mr. Troy, the Collector, had politely offered, and commenced taking evidence, as elsewhere, in private, upon oath. It was intimated to me that the press and public were desirous of attending; I replied, that although I was not under any official instructions upon that point, I deemed it my duty to preserve the proceedings in that shape which would reserve publicity, or any promulgation for the judgment of my Lords.

The first evidence directly connected with the late ship was that of Mr. Ebenezer Pike, the managing director and principal proprietor, who produced the attested list of the "Sirius's" specification and equipment, the last report of the state of her engine, her value and amount insured, the list of passengers embarked in her, the form of journal usually kept, the list of officers and crew, the form of journal intended to be kept on board for the future, and copies of the letters announcing the accident to the Board of Trade, and of acknowledgment of services rendered by the naval, military, and coast guard forces.

The next important, because most collected and active witness of the disaster before me, was the chief mate, Edward Byrne. From him I received the ship's log-book (submitted with these documents to my Lords)—a clear acknowledgment of the ship's sea-worthiness and good steering trim, her number and capacity of boats, what headlands and lights were seen and set between Dublin and her place of wreck, what courses steered, by whom ordered, what allowances on those courses for local deviation and magnetic variation, how the speed was estimated, what precautions after the fog overcast them, whether her speed was eased, whether the lead was hove as her reckoning towards Ballycotton Island drew to a close, what steps were taken and orders issued after discovering danger and backing off after striking on the rocks, whether the deck pumps were rigged and manned, the boats cleared away, guns fired, rockets let off and blue lights burnt, passengers assembled and admonished to avert confusion; what were the actual proceedings after the ship was forced upon the shore as the only hope of saving life and property.

Adverting to the foregoing points of evidence in chief, I examined the commander, Lieutenant John Moffatt, of the Royal Navy; the carpenter of the ship, Patrick Scanlan, who was on the look out when she struck, and subsequently examined her leakage, rigged pumps, and cleared away for getting boats out; the second mate, William Murphy; the helmsman, David Barry; the master of a steamer, a passenger, Mr. Archibald Cameron; a seaman passenger, Thomas Ahearn.

With direct reference to the arrangements for rescuing property by the owners of the ship at the instant of their receiving the report of the accident, I took the evidence of the commander of the "Sabrina" steam ship, Mr. N. S. Parker; he having been ordered with steamer and lighter to proceed to the wreck; also the evidence of the superintendent of ship's equipment, Mr. Robert

William

William Buckley, who was ordered overland to the wreck by the managing director, Mr. Pike.

Report on the
Wreck of the
Steam Ship
"Sirius."

And reverting to the several documentary links of evidence already quoted, as also the outline charts, Nos. 1 and 2, on which I have laid down the track and ultimate position of the unfortunate ship, your Lordships will possess data whereon, if desirable, higher judgment can be exercised than that I arrive at, and have now the honour to submit hereunder.

That the "Sirius" steam ship, belonging to the Cork Steam Ship Company, of 703 tons, and 280 horse power, left Dublin on the morning of the 15th of January last in good steering trim, with compasses in good order, and the local attraction recognized, the ship equipped with all proper means of navigating, her boats of number and dimensions according to Act of Parliament, with a complement of officers and men and boys amounting to 26, and 46 passengers, besides the stewardess, making 73 persons total on board.

That the said ship arrived off and passed the several lights in due accordance with courses steered, and so took departure at 10 h. 10 m. on the same night, at about three miles outside (southward) of the Conningbeg light vessel, subsequently sighting the Hook Light at 11 h. 5 m. upon the lee beam, as was expected, and in about 5 ½ hours after passing Conningbeg Light, she struck the foot of the cliffs of Ballycotton Island at 3 h. 45 m. A.M., from whence she was backed off in a few minutes, but on turning a-head again apparently struck on the same rocky shore; she was backed off and head put seaward, but in some 30 minutes it was evident the second shock on the rocks had injured her beyond the power of the pumps to keep her clear, whereupon she was run upon the first land she might pick up, and which proved to be on the eastern point of a place called Ware's Cove, half a mile westward of Ballycotton Point, where her stern was urged at the instant of her forepart sinking in deep water, and by her stern becoming fixed upon the rocks, so close that a line could be thrown to a high detached rock of about 20 yards from the mainland cliffs. All those passengers who would avail themselves of the quickly-planned method of escape which thus presented itself, did land safely before daylight discovered them to the coast-guard, except an uncertain number, said to be 18 or 19, whom no argument could restrain, and who were upset and lost out of the boat they rashly seized upon and launched from the forecastle of the sinking forepart of the ship. In fact, not a life was lost but through that act, and although the passengers were otherwise rescued in less than two hours after discovery by shore means, the danger to life was so little imminent that the officers and crew voluntarily remained on board the wreck for five hours after, to watch and save property.

That it is apparent the said ship was not skilfully navigated during the previous five or six hours to her wreck.

That the best of the courses given in evidence (the second mate's, Mr. Murphy), and that only by assuming the local deviation to be duly allowed, could possibly give a proper berth to that only salient point on the voyage between Conningbeg Light and Cork Heads; viz. Ballycotton Island.

That I find from all the evidence unqualified acknowledgment of the coast guard services under Mr. Jeremiah Coghlan of Ballycotton station, to whom the saving of life, conveying the sufferers to their quarters, mitigating the suspense of those on the wreck, saving at the instant all property within reach, guarding to their utmost from plunder, until reinforcements could arrive, and enduring incessant fatigue in guarding afloat for the ensuing 60 hours.

That I find the locality of the wreck was occupied by the magistrates and constabulary, as also by the marines sent by Rear-Admiral Sir Hugh Pigot, and the troops ordered by Major-General Charles Turner, with all possible despatch, and without such reinforcement the desire to plunder, and which the dense fog favoured the country people in effecting, as manifested in the first three hours of the catastrophe, could not have been checked to the extent it was. The essential protection quoted is attested

Report on the
Wreck of the
Steam Ship
"Sirius."

by the Rev. Mr. Hewson, whose individual exertions are strongly marked, whilst the letters of the owners of the ship testify the appreciation and importance of such.

That I find the "Sirius" was not covered by insurance beyond half her value, and that prompt arrangements were made for saving the property, which arrangements were further aided by Sir Hugh Pigot ordering Her Majesty's steam vessel "Myrmidon" to the wreck; and no doubt, if the dense fog had not detained the combined means in port for 24 hours, much might have been cleared from the wreck, but as it was, her holds filled, her forepart sunk, the sea surged over and through her, leaving no part accessible on the next day but the cabin, which had been cleared of its moveables before the crew left, and sent in custody of coast guard on shore. Such matter however as washed out of the ship, and was swept along the adjacent coast, exposed unavoidably to the rapacity of the peasantry, but the vigilance of the constabulary, coast guard, as incited by the magistrates, receiver of droits, and agents representing the property, will still extricate much, and show that self-appropriation of wrecked property cannot pass with impunity.

My inquiry having elicited the nature and course of the wreck in question with subsequent proceedings, I now, in furtherance of my instructions, beg leave to submit to your Lordships' attention matter which this accident suggests and evidence supports:—

That the master and chief mate of steamers should be thoroughly acquainted with the coast their traffic line embraces, or carry one or more pilots to ensure local as well as general knowledge.

That they should be examined touching their aptness in navigating by chart.

That their form of journal or log-book should include the bearings of passing headlands and lights, and the courses and distances run. The form of the "Sirius's" log included no observation of those important elements for navigating a vessel in case of retrospective evidence.

That it should be compulsory the rate of speed should be ascertained (and recorded) by logship, as well as the revolutions of engine noted down.

That they be compelled to stop and heave the lead whenever they are approaching land or shoals, at such intervals as would ensure, by the nature of the soundings, they could not in the interval get into danger at the rate of going.

That in case of fog, the consequences of bad steerage or collision should be mitigated, if not averted, by not going more than half speed—less speed at discretion.

That the stipulation of a "life-boat," which may never be satisfactorily constructed or disposed of, and to which all affrighted persons would rush in the moment of danger, should be rescinded, and those vessels which cannot carry paddle-box boats by weakness of paddle-box structure, or of crew to work their davits properly, even with the chance aid of passengers, be compelled to carry two (or four according to size of ship) flat-bottomed boats of the proportions of paddle-box boats, upon canting davits, and slung in chain gear, so as to be eased out when wanted, or boused in snugly at other times; the master and mates alone having the key to unshackle them by.

That whenever the position of a ship is in danger or doubt, her signal guns, rockets, and blue lights be used freely.

That the local attraction and deviation of each ship's compasses be ascertained by an authorized person.

That the masters, mates, pilots, engineers, and carpenters of stranded ships be suspended from taking other appointments of the sort until their individual conduct has been scrutinized and reported on.

That

That the attention of the Ballast Board of Dublin be commanded to forthwith establish two lighthouses (on a transit that shall clear the Smith's Rocks) upon Ballycotton Island, and a single light (of distinguishing character) upon Helwick or Ballinacart Heads, to avert the frequency of wrecks along the 60 miles sweep of coast at present without a lighthouse. The collected evidence craves that Ballycotton Island be lighted forthwith. Cable Island, once talked of, would not answer the coast objects.

Report on the
Wreck of the
Steam Ship
"Sirius."

Submitting with all deference the conclusions and suggestions I have arrived at in the inquiry confided to me, in the prosecution of which I have to acknowledge the proffered legal assistance of Mr. John Bennett, notary, and Solicitor to the Customs at Cork, and have the honor to be,

My Lords,

Your, &c.

(signed) *H. M. Denham,*
Captain R. N.

"TRIBUNE," SCREW SCHOONER.

REPORT of Captain *Denham*, R.N., F.R.S., on the Loss of the "Tribune" Screw Schooner on the Coast of *Wexford*, 27 October 1847.

Report on the loss
of the "Tribune"
Screw Schooner.

To the Right Honourable the Lords of the Committee of Council appointed for the consideration of all matters relating to Trade, &c.

7 February 1848.

IN pursuance of their Lordships' warrant, addressed to me at Liverpool on the 17th of January 1848, I proceeded to Dublin on the 21st, immediately after transmitting my report on the case I had been inspecting at that port of collision between the steamers "Flambeau" and "Kirral."

I found on my arrival at Dublin on the morning of the 22d, that the Collector of Customs, Mr. Worthington, had been instructed by the Board of Customs, at the instance of my Lords, to render me all possible assistance in my mission; and I was instantly aided by the use of a room and the services of a messenger, with access to the ship's register.

The agent to the underwriters, Mr. Astle, and likewise the agent* of the Senator Screw Ship Company, to whom the lost vessel had belonged, proffered me their services, which were found so essential to avail of in a case of two months' date, and the master and crew distributed; but by cordial co-operation I have been enabled to compile the following particulars:—

The said vessel ("Tribune") was an iron-built screw steamer of 247 tons carpenters' measurement, but of only 190 tons burthen after deducting the tonnage of her engine-room. She was rigged as a three-masted schooner, and, like those schooners lately introduced with an auxiliary propeller, depended chiefly on the sails, her engine power being but 28 horse. She was 122½ feet long upon deck, 20 feet breadth of beam, and 12 feet in depth of hold, and was built at Kingston upon-Hull in 1845, and fitted with three water-tight iron bulkheads. She was the property of a company in Dublin called the Senator Screw Ship Company, and at the time of her loss was estimated as worth 6,000*l.*, and for which sum she was insured in the Marine Insurance Office, Dublin, represented by Mr. John Astle, who demurs on the ground that the said vessel was not properly commanded and navigated, &c.

It satisfactorily appears in evidence that, with the exception of not having the required number of boats, not being provided with authorized charts, and her local deviations of compass courses not being properly defined, the said vessel

was

* Mr. Henry Loftus Allen.

Report on the loss
of the "Tribune"
Screw Schooner.

was efficiently equipped; and as far as the commander's capabilities are evinced she was well appointed in that respect. There was, however, an informality incurred in not having his name endorsed on the register, but that is explained in the agent's statements, wherein it appears that the master, Thomas Gurney White, being of good character, education, and experience, and having served as chief mate for the previous two years in the said vessel, and a sister vessel, the "Senator," was decided to be by a Board of Directors a fit person to occupy the vacancy of master in the "Tribune," and as such he was sent in charge of her to London forthwith, but his confirmation deferred until an absent director could be made acquainted of the election, who concurred in the merits of Mr. Thomas Gurney White, yet disapproving of having two brothers masters in the same employ; an objection which the other directors adopted, and set about selecting another person. In the meantime White made a successful voyage, and was on his second voyage when wrecked. All this time he was aware of his name not being in the register, and his employers did not perceive the omission as important. Nor indeed can the matter be at all connected with the disaster as a cause. It certainly was not to foist an incapable on the public or underwriters, as testified in the examination he underwent by me in the course of this inquiry, and yet he was not cautious in conducting his vessel, as will be shown.

The going to sea with but one boat instead of two, as the Act provides, is explained, though by no means justified. The second boat had been left behind for repairs. The master was wrong in going to sea without his establishment of boats, although the deficiency was an act of the agent's. At the same time that deficiency in nowise contributed to the loss of vessel and cargo in this case. It was not a case admitting of carrying out anchors, or deriving any assistance from boats; yet it was wrong in the sense of common precaution, as well as a violation of the law.

The not being provided with authorised, *i. e.* Admiralty Charts, but preferring such as the ship-chandler might choose to pack up, at four times the cost, is a sample of that perverseness which prevails in the merchant service, and which really requires legislative enactment, to the effect of its being unlawful to use any charts not stamped at the Hydrographical Office of the Admiralty. The late master of the "Tribune" used such charts of the English and Irish Channels as he found the "Tribune" furnished with, viz. "Nories," and which were actually supplied from the shop of Mrs. Taylor, of the Minories, "an agent for the sale of Admiralty Charts," at a charge of 13s., whilst the Admiralty Chart was at hand at an officially regulated price of 3s. It would thus appear that the masters of vessels or agents who do not stipulate for Admiralty Charts at such shops, are supplied with what costs most, and not with reference to guaranteed accuracy. Nevertheless, the loss of the "Tribune" was not attributable to the charts on board; for I find that the relative bearing and distance of the points which embrace the run that proved fatal to her, agree within one degree of the true bearing, and of two miles in the distance, between the Land's End of England and Carnsore Point, Ireland, when compared with the Admiralty Chart; and consequently, the courses shaped, and proposed run, which the master of the "Tribune" relied on, were well founded, judiciously planned, and as it proved in evidence, actually steered. As, however, the result of a vessel's progress depends on the course and distance making, and not upon what she may be steering by the binnacle compass, unless that compass course ensures the making good by correct allowances for current, leeway, magnetic variation, and local magnetic deviation.

It appears that the "Tribune's" courses by compass, and log-measured distances upon each, were estimated with reference to the admitted set of tides, the magnetic variation ($27\frac{1}{4}^{\circ}$ W.), and the probable leeway (which in this case was accelerating her right-an-end, as the wind and sea were with her courses), and were calculated to put her at positions of unquestionable safety and promising fairway, seeing that her departure was the Longships, and her destination Dublin.

It was at noon of the 26th of October last, when she had arrived from London, without incident to throw doubt upon her compass, to her point of departure for the Irish coast. She was $1\frac{1}{4}$ miles W. N. W. from the Longships. The wind was moderate from the S. S. W., and the weather hazy; her speed increasing from $7\frac{1}{2}$ to $9\frac{1}{2}$ miles per hour by the log, as the wind freshened and acted upon her

her square sails, aided by the full power of her steam, which was kept up. The master rightly assumed that the flood and ebb of the Bristol Channel as he crossed its mouth, in the next 12 hours would balance on his course of N. by E. $\frac{1}{2}$ E., and upon which course he did run until his regularly hove log gave a run of 95 miles or of 98 miles with the heave of the sea, which when pricked off, placed him 7 leagues W. N. W. of the Smalls Lighthouse, from whence at midnight, and exactly 12 hours since his departure from off the Longships, he hauled (under a rate of $9\frac{1}{2}$ knots, accelerated by a $1\frac{1}{2}$ knot young flood tide) N. E. $\frac{1}{2}$ N. for two hours; so that at 2 A. M. on the 27th, he had advanced $22\frac{1}{2}$ miles; here a cast of the lead would have warned him of the deviation operating. He, however, had no doubts, and again altered his course to N. E., which was a discreet track to adopt for passing the Tuskar Light at a 5 mile offing, supposing him to have realised the previous courses. The master had kept the deck and been on the look-out; his chief mate was in charge of the watch, under orders to look out on the port-beam for the Tuskar; and when doing so, fancied, just at 3 o'clock, *i. e.* in one hour's run, that he did see a light in the expected direction; he hastened to the master, who was resting his head on the cabin table, and reported it. The master returned with him to the deck, to set the anticipated light of Tuskar, when he beheld a range of breakers on his port-hand, into which his vessel was impelled in an instant, at her full speed of $9\frac{1}{2}$ miles rate, which grounded her fore and aft upon a sandy flat, and on to which she was beaten broadside on by the surf as the tide rose, and the sea broke over her so as to wash away the boat and clear the decks, and in fact break the vessel in two at her mid-ship bulkhead by the time the day dawned, and developed the actual main land beach abreast of Tacumshin Lake, about four miles westward of Carnsore Point on the coast of Wexford.

Report on the loss of the "Tribune" Screw Schooner.

The vessel was so urged up the steeper part of the beach at high water period, which was about half-past six on this morning, as to permit the 16 persons who were on board to land themselves by means of the rope, which the active exertions of John Farrell, seaman, had provided. They could indeed have effected this earlier, but it was difficult to persuade themselves they were on the main according to the courses steered, but rather feared it must be a detached bank. The coast-guard came down to protect the property, as well as the agent to Lloyd's, and during the following 11 days the master, mate, and engineer saved all that was possible of the ship's equipment and a general cargo. The vessel rapidly broke up, but the engine was saved, and as much of the cargo as will be subject to a moiety of the gross freight on board.

The master's evidence is borne out by that of his mates and crew, which I had taken in Dublin prior to his return to that place, by all of which it appears that the log was hove every two hours, the alleged courses were steered, and a good look-out kept, also that the weather was thick but not foggy; and in this latter particular, which precluded seeing the Conningbeg light-vessel, at the four mile distance at which the "Tribune" passed her, we are satisfactorily informed by the log of the lightship, a copy of which was politely afforded me from the Ballast Office at Dublin.

The master of the "Tribune" thus closes his evidence:—

"I have no complaint to make against my owners, mates, crew, or any person whatever in this disaster. I most solemnly declare that I believe my compass deceived me. I know by constant inspection during the night that my helmsmen were faithful; I did not get a cast of my lead, though it was ready at hand; I was too confident of position; but I am now as truly aware that an occasional cast of the lead after midnight would have effectually warned and guided me."

We have it instanced in the foregoing how, in a run of 15 hours, covering merely 132 miles of distance, with a preponderance of tidal set for one-fifth of the time to the eastward or right-hand of her desired track, and with the courses shaped consistently with well-known and accurately chartered detail of the track, an iron ship may be thrown out 15 miles to the westward or left-hand of her designed and confidently supposed position. It was alleged that this disaster could be attributed alone to "an error in the compass." But lest that should be resorted to as an excuse for apparent unskilfulness, I sifted the case with a determination to detect, and by example to check resorting to so vague and perhaps convenient excuse for some masters of ships to wrap up their culpability

Report on the loss
of the "Tribune"
Screw Schooner.

culpability in. The chain of evidence shows that this loss arose from the occasional, but most uncertain (as to inclination of vessels or of actual amount) operations of the local attraction and disturbing influence which the compass needle is liable to on board iron screw vessels, particularly if they are not corrected (after the most careful testing upon every point of the compass) by the most approved course of magnetic induction in the binnacle region, and after that the amount of any unsubdued attraction ascertained (by again swinging the ship upon her greatest inclination as well as when upright) and tabulated as constants to be applied to all courses in rotation, in like manner as the local deviation of timber-built ships are found to require. It should also be ascertained if any extraordinary vibration is imparted to the compass when the screw propeller is in full rotary action, and such should be subdued by giving the greatest possible elasticity to the rests of the gimbles.

That such precautions are of vital importance, and require the exercise of Government regulation, to the effect that approved and authorized persons shall alone adjust and certify so vital an adjunct to safety of life and property, will be urged by the loose mode, and indeed absence of any scientific system, which the following extracts from evidence manifest :—

Mr. Rochfort, master of an iron screw vessel, the "Rose," of Dublin, says, "Our local attraction was obtained in amount, and corrected by Mrs. Taylor, of the Minories, appointing a person. We were swung in the East India Dock, and counter-bearings taken, when magnets were applied, &c."

Mr. Kananaugh, one of the previous masters of the "Tribune," says, "During the time I commanded the 'Tribune' she underwent no testing of local magnetic deviation. I had no confidence in her compass courses, and could only manage to navigate by allowing variable corrections as we altered the direction of her head, and those corrections were what I had ascertained to be applicable to a sister vessel, the 'Senator;' but of heeling over under sail, we found half a point more deviation in that direction. I am now commanding an iron screw schooner which was tested and corrected by magnets, and yet I make allowances for inclination, and when heading N.N.E., amounting to three-fourths of a point."

Mr. T. G. White says, "I was chief mate of the 'Senator' iron screw vessel at the time her compasses were adjusted by a Mr. Wiggins, from Mrs. Taylor's, of the Minories," &c.

Again, when master of the "Tribune," he says, "Being aware whilst mate of the 'Tribune' that the master shaped his courses by the compass as said to be corrected for local deviation by the party sent by Mrs. Taylor, I steered without any allowances." Again,

"We usually allowed from half to a whole point deviation of compass towards the head we might heel over to, but in the trip under inquiry (and wrecked upon) we were running with the wind aft and vessel upright. Our compasses were affected sometimes when the propeller was in full play, by spinning round for five minutes at a time; this would occur at uncertain times, and continue to perplex us for four hours; and which we tried to check by changing cards, and by putting cork under the grumble points, also by tying a cork to the compass towl just under the upright pivot point."

In animadverting on the laxity of attention to this important element in the safe navigation of iron ships, it is due to the owners of the "Tribune," as well as the Screw-Ship Company which Mr. Astle represents, and called the British and Irish Steam Packet Company, that I should report their expressed anxiety to conform to any regulation which my Lords may be pleased to institute; their present difficulty is where to apply to for scientific aid on this point, one which they admit involves every hope of safe conduct to their vessels, and to attain which they do not willingly resort to the chance means of the source set forth in a certificate handed to me. I have added to the grave consideration of this subject, by relating how the Astronomer Royal, whom I had the privilege of attending, undertook in person to adjust the first iron ship that went to sea, in 1838, so intricate a solution of practical science was it esteemed; and as each vessel is totally different from another in this respect, and are multiplying, a reference to officially recognised science and experience is suggested.

Whilst

Whilst ascribing, as I do, the loss of the "Tribune" to unfaithfulness in her compass, I beg to draw attention to the vexatious neglect of the head; a culpability attaches to the master of the "Tribune" on this too often neglected indicator, inasmuch as he was aware of his precarious compass means, and sensible that he had run for the last two hours beyond the bounds of security, if local deviation might be at work. In submitting to my Lords for future regulation the necessities and exigencies of local magnetic deviation and sounding, I have the honour to enclose this Report.

Report on the Loss of the "Tribune" Screw Schooner.

(signed) *H. M. Denham.*

"FINN M'COULL" STEAM VESSEL.

REPORT of Inquiry into the Case of the Steam Vessel "Finn M'Coull," July 1848. Report on the Loss of the Steam Vessel "Finn M'Coull."

To the Right Honourable the Lords of the Committee of Privy Council for Trade, &c. &c. &c.

This Report is submitted by Captain *Henry Mangles Denham*, R.N., F.R.S., their Lordships' Inspector of the said Steam Vessel Accident.

PURSUANT to warrant of authority under seal, and dated 12 July 1848, your Lordships' inspector proceeded to Liverpool on the 14th of the same month, and placed himself in communication with Mr. John Glover, the managing owner of the said late steam vessel, who had reported her loss by letter of 10 July, and enclosed the master's statement of the circumstances, and by which it appeared that the said steam vessel was suddenly and totally wrecked upon an unknown rock situated in Tuskar Sound, coast of Ireland, on the morning of the 29th of the previous month of June.

From the managing owner was received, and most readily produced, the copies of documents designated thus:—

- No. 1. Copy of register and log-book.
- „ 2. „ ship's value, and amount insured.
- „ 3. „ manifest of cargo.
- „ 4. „ official certificate of sea-worthiness.
- „ 5. „ Lloyd's Register.

Deposing likewise on oath in the following startling words:—

"In putting the above documents relative to the 'Finn M'Coull' steamer, I further declare that it is evident, on comparing the unauthorized chart, which had been bought of the chart agent at Liverpool, with the Admiralty chart now shown to me by Captain Denham, and which the commander of that vessel admits has dangers laid down around the Tuskar Lighthouse (not in Walker's chart of 1845), that the said vessel would not have been run so close to the lighthouse, and consequently not upon the adjacent rock, which caused her total wreck on the 29th of June 1848. And grievous as the fact is, I see no relief from spurious charts until it is rendered unlawful to expose them to sale. In the present case the erroneous chart is published by the Admiralty agent at Liverpool, and so stated on it."

The master of the late steam vessel, "Finn M'Coull" was then examined at length on oath; he corroborates the impression of his owner in the following passages:—

"I consulted my chart, the one I now hand to you, viz., a chart of the St. George's Channel, published by the agents to the Admiralty at Liverpool, which chart I found on board as part of her furniture, and which does

Report on the Loss
of the Steam Vessel
"Finn M'Coull."

not lay down any rocks northward of the Tuskar, nor any danger to the northward nearer than $3\frac{1}{2}$ miles. I therefore did not hesitate, as the lighthouse was clear before me in open day, to haul, as I believed, at half a mile northward of the lighthouse. I believed I should pass in eight fathoms water, and did not consider it necessary to heave the lead or to slow the engines; it was therefore an astounding surprise to myself and all hands when the ship struck. Unfortunately I had not the Admiralty chart which you show me, and which does lay down rocky danger at one-fifth of a mile off the north side of Tuskar. I declare I did not know that such a valuable document existed. The chart I had inspired confidence, seeing that it was published by the agents to the Admiralty. And it is unaccountable to me why that same party supplied a similar erroneous chart, dated 1848, since the loss of my ship through using the copy they sold of 1845. I now understand that I ought to have been supplied by them, in virtue of their appointment, with an Admiralty chart at the cost of three shillings, whereas they charged twelve shillings for the unauthorized and evidently false chart."

Although there was admission in the foregoing to the effect that the Admiralty chart, "No. XVII. Coast of Ireland," exhibits rocky danger to the northward of the Tuskar, and that such would have warned him to have given a wider berth to the Tuskar than he did or deemed necessary, whether the said rocky danger was the rock he really struck upon or not? And although the bearing which he, the master, expertly took of the lighthouse whilst on the rock, viz. S. $\frac{1}{2}$ W., does, when reversed, intersect the sunken rock laid down on the Admiralty chart, yet, as he entertained an impression that the actual rock he bilged on was at least half a mile off the main rock of Tuskar, that he believed he had on a recent occasion gone nearer with impunity, and that the senior lightkeeper had told him that he estimated the rock he saw the "Finn M'Coull" strike on, to be at least half a mile off, and which rock he was familiar with as a pollock fishing rock, and that it was called the Gipsey Rock, from the circumstance of a steamer of that name having struck on it; statements which left it just possible that the sunken rock marked on the Admiralty chart at one-fifth of a mile on the bearing of N. $\frac{1}{2}$ E. might not be the outer existing danger, and at all events left the allegation in the master's statement to their Lordships, viz. "struck on a sunken rock not laid down in the chart." Also the remark in the owner's report to my Lords, viz. "which appears to have entirely arisen from the rock on which she struck not being marked on the chart, but deep water stated to be where it is," open to the bare possibility, in their minds, of the omission of the actual rock applying to the Admiralty chart, an inference which would naturally be promulgated to the injustice towards and disparagement of an official chart, while, on the other hand, the omission should be supplied forthwith as a correction "for the prevention of the like accidents in future," if, by testing, the allegation bore upon the Admiralty chart too. Your Lordship's inspector was moved to invite the master, Mr. Robert Gellatly, to accompany him to the spot, a proposition most promptly seconded by the managing owner, Mr. John Glover.

Accordingly we arrived at the nearest port, Wexford, on the 19th of July, where Sir James Dombain, the Inspector-general of Coast-guard, happened to be, and most cordially approved of Commander Douglass's district rendering all the assistance which the coast-guard boats on the coast nearest to the Tuskar could afford. The station called Ballygarry, situated about 10 miles of road across country from Wexford, was selected, and where, besides the gig-boat of the station, a small pier shelters some fishing yawls, one of which would be required to anchor over the said sunken rock as a beacon to sound round, and to intersect by sextant angle for determining position.

The weather was of that boisterous nature as to preclude going across Tuskar Sound, or of surveying the spot or landing on the Tuskar itself for the ensuing six days, but that interval was occupied to the best advantage in obtaining particulars concerning the movements of the wrecked steamer observed by and the assistance rendered from the coast-guard stations on the occasion. Also in communicating with the agent to Lloyd's, Mr. Francis Harpur, respecting the amount of property saved.

It was on the 26th July, when provided with the coast-guard four-oared gig,
zealously

zealously prepared by Mr. Thomas Bate, the chief officer, and escorted by an intelligent fisherman, Harpur, in his yawl, we proceeded to the neighbourhood of the Tuskar, and having sought out the shoalest spot to the northward of the lighthouse, and there anchored the yawl, we sounded outside of it on the western, northern, and eastern aspects, and not finding but deeper water, and the master of the late steamer exclaiming that the yawl truly indicated the spot he struck on, and the fisherman Harpur asserting it too; and when the head light-keeper was asked whereabouts the "Finn M'Coull" first struck, he at once pointed to the beacon boat we had anchored; the necessary angles were obtained, which when plotted, proved that the "Finn M'Coull's" sunken rock is faithfully laid down on the Admiralty chart, has all along been known as the Gipsey Rock, but wrongfully estimated as to distance by casual observers, and altogether omitted in the unauthorised chart on board at the time. These important points are referred to in the master's evidence thus:

Report on the Loss
of the Steam Vessel
"Finn M'Coull."

"Being under the impression that I was caught by a rock lying at the distance I designed to be off the Tuskar, say half a mile, and the light-house keeper stating also that he considered the rock (which he calls the Gipsey,) and saw me strike upon, to be at least that distance; although the Admiralty chart you show me has no rock farther off northward than one-fifth of a mile, I perceive the propriety of my accompanying you to the actual rock I did strike on, in order to clear up that discrepancy, persuaded nevertheless as I am that had I a sight of the Admiralty chart, whether the actual rock is one-third or half of a mile off, I should have given the lighthouse rock such a berth as would have averted the loss or danger of my ship; and I further declare, on this 27th day of July 1848, that on surveying the actual rock (upon which I struck and caused the loss of the said steamer "Finn McCoull," on the 29th of June last), with you by invitation, to decide whether such rock is laid down in the Admiralty chart published June 12th, 1847, and numbered XVII., an operation which we performed by laying a boat at anchor over it, and your taking sextant angles between the Tuskar Lighthouse, Carnsore Mill and Greenore Mill, together with angle of elevation of the lighthouse reflectors above high water level; then sounding westward, northward and eastward, but not finding any less depth than four fathoms outside the 12 feet spot under the beacon boat, which 12 feet being obtained at half ebb, would leave but seven feet on it at low water springs. The next part of our operations yesterday was to land at the lighthouse rock, when from the light-tower you took intersecting sextant angles, and the light-keeper, Thomas M'Kenna, as well as the fisherman Harpur, identified the spot of your observation afloat as the well known to them Gipsey Rock, and the actual one I struck upon, but which, unfortunately for my own pilotage, was not laid down on the chart I had on board; though as I plainly now see and admit, is shown on the said Admiralty chart, and upon the exact bearing I took, but actually closer than I estimated it was. I am therefore confirmed in my plea of having lost my ship through a spurious chart being sold by Admiralty agents to my owners."

Hence it does appear that the loss of the said steam vessel is to be attributed to the absence of a correct and authorised chart on board; and to avert the like accidents in future, your Lordships' inspector recommends that all steam vessels (for which the Act in question is intended) be required to be provided with Admiralty charts of the latest possible date, of at least the particular route for which they clear out; such charts are not only the necessarily correct ones, but are to be obtained for one-fourth the price of the unauthorised charts. And as it is equally, if not more essential, that sailing vessels should be so provided, seeing that in proportion as they cannot repeat their voyages so rapidly, their pilot knowledge is not so readily attained, it suggests application of such a regulation as would render it illegal for any British vessel to proceed to sea without such charts, or a certificate from the Hydrographer of the Admiralty that no official chart exists of such and such a portion of her intended voyage. It is submitted indeed whether it might not be desirable to enact that no chart shall be sold or bought that is not under the Hydrographical Office seal, to the intent of giving provisional character to those charts emanating from private compilation, where the Admiralty surveys have not yet extended; and effectually

Report on the Loss
of the Steam Vessel
"Finn M'Coull."

checking the dissemination of privately compiled charts of regions and localities actually anticipated by such official surveys and publications as "Admiralty Charts and Sailing Directions."

Whilst the loss of the steamer in question is ascribed by owners and commander to the absence of a faithful chart, and indeed owing to the misguidance of the chart sold to them; and although the charge of omitted danger is proved against the chart they had, and they plead clear, though vexatious excuse for not knowing of or being able to procure authorised charts: nevertheless, the said master should not have taken upon himself to pilot her by the inner route of Tuskar, with the small amount of local knowledge he possessed; he had been through the Sound as a seaman in a coasting vessel five years ago, but only once as master of the "Finn M'Coull," and then he believes he went over the same rock, but it was fortunately high water; unconscious of that escape, he chose in his following voyage from Liverpool to Youghall, after taking departure from the South Stack of Holyhead, to pass inside Tuskar, with the calculation of saving about three miles and smoothening his water, and thereby make up the lost time of a stormy night to save tide at Youghall Bar, for which he had a pilot on board, but considering the pilot was for that bar only, he did not send for him, but says, "being clear day time (10.45 a.m.), having been safely passed at that distance off before, and relying on my chart, did not hesitate." This case then may go to strengthen a suggestion, "That all steam vessels be required to carry one or more pilots for the coast their traffic route embraces, until the master and chief mate shall be found by examination to be competent to act as their own pilot."

The loss of the "Finn M'Coull" was mercifully (for such a fearful locality) without loss of life. Through the commander's prompt and calm arrangement of his own boats, all hands, and as many stores as possible were forthwith landed on the lighthouse rock, and there kindly succoured by the keepers. The vessel's value, 9,800*l.*, of which 7,000*l.* insured; the cargo (corn and meal) 1,300*l.*; ship's stores saved, 120*l.*; cargo saved, 53*l.*; as gathered from evidence and documents collected by your Lordships' inspector.

(signed) *H. M. Denham*, Captain R.N.

WRECK OF THE "ORION" STEAMER.

REPORT of Captain *Denham*, R.N., F.R.S., 8 August 1850.

Report on the
Wreck of the
"Orion" Steamer.

To the Right Honorable the Lords of the Committee of Privy Council for Trade, &c. &c. &c.

THE nature, circumstances, and causes of the wreck of the steam ship "Orion," and the loss of about 50 lives, near Portpatrick, on the morning of the 18th of June 1850, as elicited by the official inquiry instituted under your Lordships' warrant, may be narrated thus:

The "Orion" was employed as a regular passenger and general cargo vessel between Liverpool and Glasgow; she had been on that station for the last three years nearly, and was so esteemed as a first class coasting steamer, that, although fitted up to berth 108 cabin passengers, she was frequently resorted to by many more than could be berthed, and on the late lamentable occasion there were at least 173 passengers on board; she was remarkable for her quick passages, and saving her tide up the Clyde, which, combined with her adaptation to elegance and comfort, and sea-going qualities, produced great confidence in her as a public conveyance.

The construction, capacity, and appointments of the said ship were as follows: She was built of iron, and divided into four distinct compartments; she was built in 1847, by Caird & Co. of Greenock, and measured 898 tons (registered 519), with a length over all of 220 feet by 28 feet beam, and at her best speed, 13 knots,

k nots, drew 11 feet 6 inches aft, and 10 feet 10 inches forward, propelled with paddle-wheels by engines of 460 horse power. She was owned by the Clyde Steam Navigation Company, and equipped and worked under the general management of Messrs. G. & E. Burns of Glasgow, and Messrs. Martin & Burns of Liverpool. Her cost was 46,000*l.*, and she was insured for 14,000*l.* in the Underwriter's room at Glasgow, which, with 16,000*l.* effected on her in the Company itself, leaves her 16,000*l.* minus.

Report on the
Wreck of the
"Orion" Steamer.

The sea-going equipment of the "Orion" was attended to by Captain Walter Douglas, the Company's marine manager, who vouches for her efficient state thus:--

"It was my duty, in concert with the captain's, and according to my own judgment, to supply and keep up thorough efficiency; and such is the liberality of the owners, that the captains have everything they sign a requisition for. The 'Orion,' therefore, I am free to declare, was perfectly equipped to the satisfaction of her captain and crew of 40 persons. I can state that her boats were not only as to Act of Parliament, but of ample capacity, two being life-boats, although one is required by the Act. The boats the same now lying in Portpatrick, four in number. As regards life buoys, she had usually two of Cartes'. With respect to danger signals, our vessels are allowed guns and flare-up lights, as well as rockets and blue lights if asked for.

"With respect to charts, the captains chose their own at the Company's expense.

"Respecting boats' gear, I declare they were amply supplied, and if not in them, it was the fault of the officers on board.

"How the boats were stowed, it was left to the captain's judgment; so likewise was it discretionary keeping them covered.

"With regard to any particular periods for the captain keeping the deck, we never dictated it; but we took care that the second and third mates should, besides other ship-managing qualifications, be pilots for the coast and harbours on their traffic voyages. Such pilot knowledge was judged of from their known experience, not from actual certificates. This system of self-piloting is not to avoid expense, but to ensure having pilots on board in bad weather when it might be impossible to ship one.

"The captain (Henderson) of the 'Orion' had been in command of her about ten months; and he qualified for it, being two months on board with the former captain, to initiate him in the peculiarities of the track between Liverpool and Glasgow.

"Thus looking to and confiding in the captain, the second and the third mates, for the skilful navigation of the ship, and to the chief mate, for the order of the ship, I could pronounce the 'Orion' to be one of the best appointed ships in Great Britain. It came like a thunderbolt of surprise upon myself and employers when informed of the 'Orion's' wreck near Portpatrick."

Under such apparent efficiency, we find that the "Orion" had been conducted up to about a quarter past 12 on the morning of the 18th of June, as far on her passage from Liverpool to Glasgow as that part of the coast of Wigtonshire called Cromach Point, near Dunman Hill, on the Admiralty chart, but familiar to those on board the "Orion" as Dunman Head, and it will be so quoted in this report; it is situated 4½ miles on the north-westward trend of coast line from the Mull of Galloway.

Portpatrick lies 11½ miles due north from Dunman Head, between which the coast recedes in a gentle sweep to the eastward one mile; the flood tide sets to the southward, parallel to the coast trend, at the rate of four miles per hour at spring tides, and two at neaps, and begins to set to the southward two hours before it is low water by the shore. Portpatrick is within a quarter of a mile of being the westernmost projection of the promontory of Wigtonshire; Black Head is really so at 1½ miles northward of Portpatrick; the latter is distinguished by its pier light, and the whole line of coast alluded to is remarkably bold, and free from off-lying dangers, so much so, that a vessel may approach it in clear day-time, to within a quarter of a mile; a characteristic which, together with the idea that by keeping within the line of Dunman and Black Heads the tidal stream is to be cheated, prompts the coaster to the very ques-

Report on the
Wreck of the
"Orion" Steamer.

tionable habit of hugging the shore, a habit with which the second mate John Williams of the "Orion" was so confidently imbued, as to cause him to be the unhappy author of that noble vessel's melancholy fate in the brief interval of one hour and twenty minutes after taking charge of the watch on the morning quoted.

The circumstances under which the second mate took charge, were these: it happened to be his turn to keep the middle watch, and he was called accordingly at 12 o'clock at night of the 17th of June; his own account is a specimen of a seaman's frankness; he does not reserve a single point, however criminatory to himself; and whatever confidence he had in his own experience and judgment, it was more than responded to by his captain, who sees him relieve the chief mate at ten minutes past 12, remains on deck as the ship rounds Dunman Head, under the second mate's steerage or "con" for about half an hour, and during which, does not think it necessary to interfere with the officer of the watch in any respect; but at about 12.30 is so satisfied at his safe position in regard to the land, which was clearly in sight, at the serene state of the weather, of the vigilant look-out on each bow, and of the skilful management of the said second mate, that he retires to his cabin. Of what passed at this juncture on the part of the master, the following extracts of evidence are to be weighed, as showing the unreserved transfer of the ship's navigation to the second mate. The master says:

"But before I retired, I told the second mate, John Williams, to proceed in the usual way, but in the event of any change in the weather, to let me know.

"I looked at the compass, she was going N. $\frac{1}{2}$ W., which I considered a proper course for safely passing Portpatrick, then one hour's sail a-head.

"The second mate had my entire confidence as a pilot for this part of the coast, as well as a most cautious seaman; I had every reason to confide in his skill, care, attention, and sobriety, and frequently did leave him in charge of the navigation at this part of our voyages, unless thick weather or dark nights attended us, and then I kept the deck myself.

It appears that the master had been in command of the "Orion" for the previous ten months, and in the habit of making three trips a fortnight along this coast. The second mate had been six years on the same station, the three last years of which was in the "Orion," in the double capacity of pilot for the Mersey, and second mate; not that he had passed any examination for such offices, but had been so chosen after due training by the owners, as a convenient combination of duties; and the only, but vitally essential point in which the master differed in opinion as to navigating round this salient feature of the coasting voyage they were so constantly engaged upon—but which it does not appear he duly impressed and enforced as a positive line of conduct by those he might leave in charge of the deck—was keeping an offing. He alleges,

"I have never been in the habit of hugging it for the purpose of cheating the tide, as I am clearly of opinion that the tide runs as fast in-shore as at a good offing; and so I have from time to time impressed my opinion and orders on my mates, bold as I have always understood this coast to be."

The second mate honestly admits what coincides with the master's statement, without, however, viewing it as an interdiction, for we find him saying:—

"In my former passages along this coast with Captain Main (the predecessor of Captain Henderson), we made very free with it whenever the tide was against us, in order to cheat it. Such was not so much the custom with Captain Henderson; but as the sea was so calm, and the weather so clear, &c., I thought by cheating the tide we should make a very quick passage. I verily believed I was at a proper distance off shore; and had I been so, the course of compass would have been justified; the sad result proves that my judgment was in error, although, God knows, I was watching every instant of our progress with, if possible, greater care than ever. I cannot plead that any unknown rock picked me up; the ship, in fact, was bilged almost on the main land. In a word, I mis-guessed my distance off the main, even when passing Portpatrick; and thus the folly of hugging the land at all."

Here

Here is an instance of a painstaking, well-intentioned seaman being lured and left at liberty to guide himself by crude ideas, instead of being specifically instructed how to steer, and not to change a given course without consulting his commander; and such orders he no doubt could and would have ably fulfilled. John Williams is a before-the-mast caliber man, whose 55th year of age and 40th year of sea service, had only rated his ability at 30*s.* per week. It was no part of his maritime education, nor unhappily is it a custom in our most costly and imposing part of our coasting trade, to navigate otherwise than by sheer guess-work. It was no part of John Williams' ideas or practice to determine his distance from the main by laying off a couple of bearings on the chart; or, easier still, getting a cast of the lead, and compassing the sounding with the corresponding zone. No, even the way through the water is guessed at; heaving the log or towing a Massey's log to denote the rate of running, or check an amount of run in a given time, precautions which no blue-jacket would dare to deny the unerring value of; but as he does for a time manage without such practical tests, he habitually shirks the small amount of trouble and time it would entail, until all at once, like the self-reproached John Williams, he finds that his presumptuous rule-of-thumb method has heaped up trouble with loss of time, property and life, beyond a life's remorse to atone for. Nor are we sure that even such an example will operate beyond the moment; nothing short of legislative intervention will.

Report on the
Wreck of the
"Orion" Steamer.

To show the fallacy of estimation of distance from land at night by eye, we have in the instance before us the following discrepancy on the all-important question of the "Orion's" departure-position in reference to Dunman Head:—

The master supposed it to be	3 miles.
The 1st mate	" 1½ "
The 2nd mate	" 1 "
The 3rd mate	" ½ "

And it is obvious how a N. ½ W. course ought, as the master says, to have cleared the westernmost projection of Wigtonshire from either of those distances off Dunman Head, because the tidal stream would be met a-head; there was no heave of sea to cause lee-way, and there was no reason to doubt the compasses, for although an iron ship, the local deviation had been neutralized, so that the master answers that question thus:—

"The compasses we steered by had my confidence; they had proved faithful as corrected with magnets by Gray & Kean, of Liverpool, which left so small a tabular allowance as to be unappreciable in practice."

It must never be supposed, however, that this vessel's movements during the second mate's charge that morning, and much less her catastrophe, had any reference to her compasses. It is true that we have it in narration, that under his direction she was hauled in, *i. e.*, northward, from a N.N.W. course, one point for 10 minutes or so; half a point more in for 20 minutes; another half a point in for five or six minutes; then a quarter point out for eight minutes; then a quarter of a point more out for about 12 minutes, which if regularly logged would read thus—the rate of speed through the water being 14 knots, and over ground 10 knots:—

At 12.25 N.N.W.,	2½ miles.	
At 12.35 N.by W.,	1½ "	
At 12.55 N. ½ W.,	3½ "	
At 1.0 North,	½ "	
At 1.9 N. ½ W.,	1½ "	Portpatrick light seen on starboard bow.
At 1.21 N. ½ W.,	2 "	Abreast of light.

Distance run - 11½ miles.

Now, laying those courses off from the most in-shore departure, they clear Portpatrick two miles nearly westward, and right seaward of where we find the "Orion" ashore; and had it been foggy in the interval, the two mile deviation from the design of those courses might have been attributed to local attraction of the needle, to bad steerage, and to the gradual effect of the flood tide on her port bow, as the two other causes drew her head eastward.

And then the conduct of the party in charge would rest on the question of "lead and look out," for nothing could have excused their not sounding

Report on the
Wreck of the
"Orion" Steamer.

before running the known distance between Dunman Head and Black Head or Portpatrick. But this is a case of clear tranquil weather; the land was plainly in sight from the starboard quarter to the starboard bow, and in due time the harbour light at Portpatrick, feeble as it is, was seen three miles nearly a-head at the last quarter of an hour's run. It was therefore a process of steering by the eye; and all those references to the compass as to points, half-points, &c., and which in narration can be resolved into "courses," were simply so many intelligible expressions of instruction to the helmsman from the second mate, as by his eye he was edging her in-shore to avoid the tide, and which he kept doing until the very look-out man considered the ship was unusually close to the shore; nor did the third mate, who was stationed on the starboard (nearest to the land) side, refrain from a remonstrating tone, for he deposes, that on perceiving the land one mile southward of Portpatrick to be not more than 100 yards off, he went aft to the second mate, who was standing by the man at the wheel, and said,

"Do you see how close you are to the land? 'Yes,' he replied. I returned to my station. We came abreast of the pier-head of Portpatrick, and so close, I might have chucked, as I thought, a penny piece on to it. I said to the other look-out man that she was never so near the land on her voyages since she was a boat. He said, 'Go aft, and tell them to keep her off.' I did so, and found John Kelly and the second mate putting the helm a-starboard. I assisted them to put it hard a-starboard, and which she had just begun to answer when she struck on her starboard bow, and bilged.

In corroboration of this, the second mate, John Williams, admits the having been warned about the land, in the following words:

"The starboard look-out man came aft and said, 'John, do you see the land?' I answered, 'Yes.' The land was, in my judgment, better than one mile off, but I hauled her off a quarter of a point, until a little southward of Portpatrick pier-head, the light of which I had seen a quarter of an hour before coming to it. Our distance off it, as I thought, was three times our length, full 200 yards, when our N. $\frac{1}{2}$ W. course ought to clear the coast northward; but, to make sure, I hauled her half a point more off. A thick black fog came over the vessel, so that I could scarcely see the paddle-box. I told the helmsman to haul her off half a point more, whilst I ran to call the captain; but before I could do so I heard the look-out men calling out 'Starboard the helm.' I turned aft instantly, and assisted Kelly and Wilson to put the helm a starboard, when she struck on her starboard bow. But how such a misfortune could happen I am more and more at a loss to account for. It was like a thunder-bolt upon me."

After detailing his conduct subsequently, his examination draws him to the only extenuating explanation the case admits. First of all, he honestly takes all reflection from his shipmates, by asserting:

"My attention was never attracted by anything from my duty; there had not been a passenger on deck to my knowledge for the last hour; all was quiet fore and aft; the look-out men and helmsmen did their duty faithfully.

"I had had the charge of the "Orion" frequently at night time along this part of the coast since Captain Henderson took the command, and I solemnly declare, that on the late fatal occasion I did not think I was closer to the shore than before times. I did not think of using the hand-lead line at all; the coast was too steep-to, and until the last two minutes too clearly in sight to require soundings.

"The fact of the light at Portpatrick pier being shown from the inner tower, instead of the one at the pier-head, may have induced me to think I was as far from the pier-head as I was from the light itself, but which light is a long way within the pier-head.

"The tide of first quarter flood was on my port bow, and likely to jerk me in; but that would have been of no consequence if I had been as far off the pier-head as I thought I was. From what I see on the spot since, I believe we struck on the Barnock Rock."

Had

Had the weather become thick at the time of arriving off the pier-head, or had John Williams been a comparative stranger in this region, his reference to a sudden fog and deceptive position of the pier-light might mitigate the reprehension which hangs over him; and to a degree such reasoning might alleviate the sufferings of those connected with this most calamitous wreck. But the fact of the ill-fated ship having been distinctly seen, and her fate instantly anticipated by two of the residents in the town from their windows, and that the pier-head itself was seen by those on board, as well as the cliffs beyond on the bow, dismisses the plea of land being obscured by sudden fog, recollecting that, from the time she passed the pier until striking on the rocks, was an interval of but 50 seconds.

Report on the
Wreck of the
"Orion" Steamer.

Then, as to the light being exhibited from the inner part of the pier instead of the outer, which it really is to the extent of nearly 150 yards, the outer tower (and pier-head) was seen irrespective of the light; moreover, it has been so exhibited for the last 11 years, and so known to be by all coasters. There are reasons why it should be restored to the outer tower, but none that would affect the case of the "Orion."

It has been shown that a sort of fascination prevailed with the second mate in regard to brushing the shore during the last half-hour. How near the ship's keel may have been to the rocky margin of this iron-bound coast it is fearful to contemplate, and therefore ought to be discountenanced. He however did bring her safely to abreast of the pier-light of Portpatrick; and in so doing, a sort of impunity would have covered his daring had he then acted with prompt discernment. At that beacon all previous evolution, guesses and risks were expunged; his eye had brought him so far safe, and here was his directing post; but here his presence of mind and eye failed him; a bluff of land was only one-third of a mile a-head; a nest of sunken rocks connected with the main lay between him and that bluff; a brisk starboard helm suggested itself; the very look-out men were so impressed, that regardless of all ceremony, they called out for it, and rushed at the same instant to do it. The very people on shore were astounded by the steamer's proximity to it, and on descrying the direction of her head, rushed out of their houses; the second mate had only ordered her off half a point; she was dashing through the water, and out of the tide, at the rate of 13 miles per hour; the distance of the first rocks a-head was but 350 yards, and requiring but 50 seconds of time to reach them; a crash, a roaring of steam, and a wild exclamation resounded. The inhabitants of the little retired town were startled from their beds, and upwards of 200 of their fellow creatures were as instantaneously roused from a confiding repose to face the horrors of a sinking ship; amongst whom, the first on deck, but not less amazed, was the master. It was at that dead hour of night time, about half-past one, when even on board packets all is lulled, if only from sheer exhaustion; but on this occasion there was no motion to discomfort, so that all (and amongst the passengers were 40 females) were as tranquilly resting below, either actually asleep or anticipating their early arrival in the Clyde, with all that security which the state of the night warranted. Even the master so felt, and asserts,—

"I considered it the safest part of my passage in which I could rest myself. I retired to rest in perfect confidence; and it was not until I felt the ship striking the rocks that I was roused. I forthwith appeared on the paddle-box bridge. I exclaimed, 'Where are we?' or, 'Where have you got the ship?' But I saw of myself that we were a little northward of Portpatrick lighthouse. I knew the fore compartment was filling; I ordered the engine to be set on, intending to land the ship to save life, but I saw the water flowing up to the starting bars. I called out divide yourselves, men, and clear away the boats, meaning my crew. The passengers were running to the boats, and throwing themselves into them as they hung to the davits; I ordered them out; I stood up on the skylight, and told them thus: 'Gentlemen and ladies, I am the captain; if you will only keep yourselves calm and stick by the ship, you will all be saved.' I saw the starboard quarter boat hanging with her bow in the water, and people slipping down the after tackle, and so jamming it. By this and previous conduct of the passengers, it was too evident they were abandoning themselves to despair and confusion, which it was impossible to soothe or allay; they absolutely crowded into the starboard life-boat before she could be lifted

Report on the
Wreck of the
"Orion" Steamer.

from her chocks. From the time of striking to finally sinking was barely 10 minutes, with merely the port quarter above water, to which the body of the passengers were clinging. The passengers were caught and dropped by me into the port life-boat, and in this act the ship came upright, and finally sank. I gained the mainmast head, and directed the efforts of the boatmen to saving those who might be floating about.

"Fearfully sad as the extent of this calamity proved to be, I declare it falls short of what I dreaded at the time I was witnessing the sudden and astounding effects of our position on the passengers, and the frantic confusion which possessed them, and utterly defied all my efforts to prevent them swamping the boats or throwing themselves into the sea. Added to which was their being cast overboard by the lurch of the sinking vessel. It is to the fortunate vicinity of our position to the harbour of Portpatrick, and the promptness of the inhabitants in coming off to us, that must be attributed the rescue of many."

The extent of this local aid may be estimated as having saved three-fourths of those that are alive to bear testimony to its vital importance, for, whilst the "Orion's" own excellent boats could only be availed of to the saving of 40 persons in the brief ten minutes of direful work, the wonderful efforts of the shore boats rescued 118. Nevertheless upwards of 46 were drowned.

The particulars of this providential succour at the hands of the Portpatrick people are vividly but modestly given by that most zealous officer and worthy man, Commander Hawes, R.N. This gentleman had for the last five years filled the office of Admiralty Superintendent of Mail Packets until that establishment was broken up; and subsequently continued as the Government Superintendent of the Harbour and suspended Works. And it is to the local respect and influence which is so cheerfully accorded by the inhabitants to his department, that must be ascribed their prompt efforts to save life during the fearfully sudden and very brief interval of ten minutes from the time the "Orion" was proudly bearing her precious freight and costly fabric past the harbour's mouth, till she was wholly engulfed, with many of her passengers entangled in her berths and gear, but leaving nearly 200 beings on the surface to sustain her vortex, and indicate, by their shrieks and throes, where the boats should grope for them. Captain Hawes refers to the varied demands on humane attention and efforts, thus:—

"The boats continued their exertions until all living were saved. I then came on shore, and was engaged assisting the exhausted, and, with Mr. Robertson (surgeon), in endeavouring to resuscitate the bodies which were landed.

"In all this I had the satisfaction to witness the truly praiseworthy conduct of the boatmen in saving life, and the inhabitants in their attention to the sufferers."

The exigencies of the rescued may be conceived when contemplated as a mass of fellow-creatures of all ages and conditions of life, the very feeblest and most fragile having been struggling in the sweeping tide for life, and unavoidably bruised in being drawn with breathless haste into the boats in a state of almost nudity, there having to crouch whilst the boatmen, on their errand of mercy, were exploring the dark space for others, and at length on scrambling, or being carried up the shore, to find all personal suffering and helplessness awfully accumulated, and the senses almost shook from their throne by the intelligence of all their family being missing. Such instances were, as a young man losing in that quarter of an hour his father, mother, and two sisters; of a man losing his wife and three daughters; wives their husbands, and husbands their wives; children snatched from parents; whilst to those who were emigrating, utter destitution of means and prospect was added to their bereavement. Such were the personal necessities and anguish which this disaster called upon the inhabitants of Portpatrick to minister to at the dead of night, and indeed for the ensuing week. Every house and cottage of that humble and remotely situated village was thrown open to the shipwrecked strangers, and every bed and wardrobe, even to the clothes on their backs, were appropriated to the sufferers' use. And circumstances of individual devotedness have come to my knowledge whilst prosecuting the inquiry instituted by my Lords on the spot, which do honour to humanity, and which one would fain see substantially requited. As for the hospitable example

example set by the worthy gallant Captain Hawes, and amiable family, it could not fail to incite those who were long accustomed to look up to him, and who, were he asked what would gratify him most beyond the contemplation of having been so eminently instrumental in this memorable work of mercy, it would be, to be able to recompense those of his fellow-labourers who could but ill afford to dispense their food, fuel, clothes, and time, as they did, without distinction or reserve, to destitute strangers; some of whom either cannot or have neglected to make any subsequent return even of the garments lent to them. It is to be hoped, and such a hope is the apology for introducing in an official report the sentiments of a domestic tale, that, either by public subscription, or from the funds of some bounteous institution, this instance of local devotedness to honest humanity will be compensated and signalled. It must not be supposed that, because a resident naval officer, both in his public and private capacity is so prominently identified with the prompt deliverance of so many in peril, he merely judiciously summoned and wielded resources at his official command. On the contrary; for when Portpatrick ceased to be a mail packet station, it also ceased to retain any organized float means. There is not a connected boat's crew under any department. It was only as regarded the foreman of stores and a messenger, that Captain Hawes had authority over; and the former, Mr. Hannay, and the latter, J. M'Culloch, most zealously carried out his plans, first by collecting a crew for the boat which the Admiralty had allowed Captain Hawes to retain, and then by mustering and directing the fishermen's exertions, as also by receiving and helping the boat-loads of sufferers as they came to the shore. Fortunate, indeed, was it that the spontaneous alacrity of those fishermen could be so guided; nor ought their cheerful deference to it to lack encouragement. It was a singular and impressive dispensation, that though Portpatrick, with its sea-light and masses of glaring masonry, &c. (so calculated to discover its presence even on a misty night, and therefore so unlikely a locality for a vessel to be unexpectedly stranded upon), should be the spot that the "Orion's" disaster occurred; at a distance of but half a mile, or in five minutes' run north or south of the spot where she split, it would have been beyond all notice, or alarm, or aid. And, as it turned out, no alarm signals could be given from the ill-fated ship, so immediately was her fore body immersed, and in fact as far aft as her quarter-deck, in the first five minutes, as she went down by the head, at once immersing her signal gun and watch bell. Indeed it was owing to her being seen by two of the inhabitants from their houses, which fronted the harbour, and who were astonished at her proximity, and so were prepared to spread the alarm on hearing her steam blow off, that the "Orion's" case was so soon announced and attended to.

Report on the
Wreck of the
"Orion" Steamer.

Short as the interval was, and sudden as the summons was for the ship's own boats to perform the duty contemplated by the Legislature when enacting that such and such boats shall be carried by steamers, viz. to succour those on board in the hour of peril, much more ought to have been effected than unhappily was; for, what with the boats being secured with resting-chocks, and a sort of permanent griping, with racked tackle-falls rove to swung-in davits, and encased with stiff-painted weather-beaten canvass, as the two life-boats were, and the quarter-boats being hung outside to davit-tackles, as much too easy of access to terrified landsmen, as the other boats were jammed, lashed, and covered beyond their impetuous desire and efforts to extricate, a condition of things that, of all others, required a minute's cool management, such as the ship's officers and crew could only accomplish, by repairing to their respective boats. Alas, here was the failing point; no such stationing or systematic distribution of mates and crew, either for their care of the boats and gear when all was safe, or to act promptly, but orderly, when all was danger, forms part of these splendidly fitted ships' discipline. No wonder, then, that so sad a result should ensue, as that those four excellent boats (in which I conveyed through rough water outside the harbour, each boat being rowed with her own oars, as many as 166 persons) should, on the few days previous, only save about 40.

It was in vain that the master, at the moment of need and consternation, called out to his crew, "Divide yourselves, men, and clear away the boats." Such dividing should have been a regulation in his ship's discipline; in fact the mates and crew ought to have been judiciously stationed, practised, and from day to day made responsible for their boats' efficiency, from the day they joined the ship. It was equally hopeless to expect his terror-stricken passengers to refrain

Report on the
Wreck of the
"Orion" Steamer.

from rash endeavours to possess themselves of the boats, even though they were obstructing and destroying the application of those boats by lowering one end before the other, by crowding into them before ready for lowering, and when in the water half swamped (through want of plugs, and entering the water end-on), crowding so rapidly upon each other as to capsize themselves as she lurched. What better could be expected, when, instead of seeing the seamen distributing their handy knowledge and soothing advice (and which landsmen are always willing to respect and follow)—the very first who rush to the boats, and after getting one into the water somehow, and without oars, actually shove off with but a portion of what could have been stowed of those passengers craving to be received, and even disregarding the master's orders to come back, were the engineers and firemen.

It cannot be doubted that when the "Orion" was in the appalling situation described, the master, the mates, and the seamen did their best; but, for want of habitual order, and looking to the possibility of their boats having to be resorted to on some sudden imminent occasion, their best efforts were little better than vexatious failures. It is to be admitted that those efforts, and the views of the master, were cut short by the ship sinking bodily so suddenly, and so much sooner, than, as an iron ship, fitted with five water-tight compartments, might have been expected. The master was aware of the foremost and midship compartment filling rapidly, but he reasonably calculated on the after compartments sustaining her quarter-deck, and lastly the taffrail, above water long enough to pass all hands into the boats. He saw that the ship had sheered into the tideway from the rock she had split upon, that her stern was seaward, that her foremost sections were under water though not yet grounded, and therefore that her stern part would be immersed in deep water, but gradually. Hence we find him exhorting the passengers to be calm, and to stick by the ship. He says:—

"I said this because I trusted that the after compartments would buoy up as much of the ship as would allow me to pass them all into the boats." And, "There was too much real cause for alarm to the passengers, and too little time to reason with them, or provide for their necessity. But, as I relied on the buoyant construction of the ship, I tried to instil the composure which I felt myself into the minds of all hands. And so, indeed, there ought, according to all human calculation, to have been time for, and to lower and load the boats properly. The unprecedented occurrence, however (yet to be accounted for), of an iron-built ship filling in all compartments at the same time, baffled my calculation entirely. All I could hope for at last was, that the ladies should have the first chance; but even this appeal was disregarded by the majority." Then, "The chief mate had no special orders to appoint the crew to the boats. It is not customary in the merchant service to do so. Such a system would have its advantages where anything like time could be commanded in case of abandoning vessels."

The section plan of the disposition of the "Orion's" compartments, and the relative position of the only breach or fracture which the divers could trace in her sides or bilges, shows that the breach, fifteen feet by five feet, would instantly fill the foremost third of the vessel, but ought not to have affected the midship compartments much, nor the after one at all. It is too evident that those parts were rapidly filled too. The chief engineer on duty at the time describes the effect experienced in the engine-room, which conveys the impression that the ship must have first struck the apex of the rock with a glancing blow on her starboard bow; and the fangs of the rock catching her flooring, ripped her fore and aft; so that whilst the first breach admitted the bulk of the water, the ripping up under the midship and after compartments accounts for their filling too, though not so rapidly. He is very positive as to the boilers not collapsing or exploding. The steam was let off freely at the instant of striking, and the fires were drowned in a few minutes. These observations may dispel the notion which the account of some of the passengers give rise to, of the boilers having exploded, and blown the ship's sides and iron bulkheads out, and hence the inefficiency of the water-tight fittings. But the sensations experienced in the engine-room, and the depth of water over and alongside of the rock, compared with the draft of the ship, together with the state of the rock, as subsequently examined by Mr. William Ross, the superintendent of police of Wigtonshire, who zealously ventured down in a diver's dress, all concur as to the description of the

the "Orion's" fabric being caused by the peculiar circumstances attending her collision with the sunken rock in question. Firstly, the ship was going at full speed, *i. e.* at an impetus equal to 13 miles an hour; secondly, she was under the bias of a starboard helm, which, with the glancing blow, hurled her to the oblique trend her track assumed as she drew along the rock and its prongs; thirdly, the apex of the rock had but five feet over it, and the prongs but eight feet at that time of tide, *viz.* one-third flood, which, five feet level, would take the swell of the ship's bow at six feet below her water-line, whilst the eight feet level would penetrate her flooring three feet, her draft being eleven feet; fourthly, the rock in question was found to have been riven on its outer slope with strips of sheet iron mixed with its fragments, the rocky disruption fresh, and the samples of iron agreeing with that employed by the builder in her construction. It added to the misfortune, too, that the ship split upon the outer part of the outermost prong of the nest of rocks which lie thereabouts; the consequence was, that under the influence of helm and sidelong contact, she sheered off at once into deep water. Half her width farther in, and she would have lodged transfixed, merely filling as the tide flowed, but not sinking. The engineer had thrown the engines out of gear at the instant of striking, to check her way, lest she should be urged over what he thought must be a projecting reef into deep water; he could not see the direction of the ship's head and position of the land; so that by the time the master saw the vital necessity of landing her to save life, the steam was gone, the fires were drowned, and the starting-bars were immersed. And thus the ship shot obliquely off until her way deadened; her bow was depressed below the surface; the flood drifted her off (as it was deflected by the Barnock Rock), and predominated on the immersed fore-body of the ship, which swang towards the main, and the fore-foot took the ground in 35 feet water, which anchored her, as it were, until she settled bodily, with her masts submersed about half way up; a position which, from its proximity to the main, and her many following days of erect and tranquil attitude, would seem to mock the sad fact of 50 persons being drowned in ten minutes, of a serene summer morning on a placid sea, within 100 yards of the shore, and not more than 400 yards from the well-known harbour's mouth of Portpatrick, the light of which was plainly in sight, and had been so for the previous quarter of an hour.

The coast plans will have helped the narration of particulars attending the progress of the "Orion" until she came abreast of Portpatrick, when the previous half hour's risk had passed off with apparent impunity, when the most palpable finger-post that man could be warned and guided by all but said to the pilot (and indeed was so interpreted by the look-out men), "Now, keep off," was almost brushed, and when the very salient projection of the voyage track was known to be not more than one-third of a mile a-head, or within the interval of one minute forty seconds of fore-reach, literally demanding a brisk starboard helm. Here, however, the eye was again depended on, and again the source of error. It is to show the discrepancy of opinion and statement on the vital point of how far the "Orion" was off the pier-head, as also to bring the mind's eye to bear upon the relative positions of the pier-head, the rocks, and the "Orion," that I have diagramed her track and horizontal section of hull to scale, on a local coast plan of the low-water feature, laid down at 100 feet to the inch. The second mate's estimated position places the "Orion" three times her length, or 200 yards off the pier-head, and which, with her head N. $\frac{1}{2}$ W. (paying off to N. by W. as he designed and ordered), would allow her to clear the Barnock Point and Rocks, then 600 yards distance in advance, and about 140 yards on his starboard hand.

The starboard look-out man, Robert Wilson's, estimated position, places the ship at but once her length, or 74 yards off the pier-head, when the said course would strike the Barnock, and so would all the depositions of those on board lead us to infer was the result, more particularly as she was observed to fore-reach to the northward, nearly to the Barnock, by those on shore, before drifting obliquely back to where she sank, and also from the fact of the tide at first quarter flood being proved by an experiment I made in their presence to be disposed to drift a vessel from the Barnock direct to the wreck in nine minutes, which was the elapsed time quoted between the "Orion's" sheer from the rock she struck upon until sinking; nevertheless, it was not conclusive, for it could not be quite reconciled with the circumstance of her not having been brought up all standing, and then rebounding, effecting a shock that would have thrown

Report on the
Wreck of the
"Orion" Steamer.

every person off his legs, and perhaps have pitched masts and funnel over the bows: in fact, no concussion was felt; a rumbling, grating noise only was experienced. Moreover, the starboard helm abreast of the lighthouse, and which it is proved was given to her, would certainly have operated over the 600 yards fore-reach occupying one minute forty seconds of time, sufficiently to clear the Barnock. I surveyed the region, and satisfied the officers of the "Orion" that there was nothing to pick up a vessel outside a line drawn from the pier-head to the Barnock; but as there were a nest of rocks just within that line, at about half way along it, known as the Ward Rocks, and as no indication could be traced on the Barnock of a vessel having struck it, attention was directed to the Ward Rocks; and thence the exploring of the divers during the unusually great ebbs and calm state of the sea on the 11th of July, and whose examination of the outer fang or stool of those rocks was suggested by Captain Hawes, in consequence of his foreman, Mr. Hannay, having discovered that it was shattered. The diving proceedings soon identified the actual spot; it is the outermost stool or fang of a cluster of rocks, called the Ward Rocks, which at various levels of tide, fill up the bight immediately northward of the harbour of Portpatrick; it never dries, but is only covered by two feet depth of water at low water of spring tides, and is only 43 yards distant from the nearest low water rocks of the main itself, and but 73 yards from the main itself, on the bearing of N. 47° 30' W. true, or N. by W. $\frac{3}{4}$ W. by compass, 350 yards from the pier-head lighthouse. There is 17 feet water at low water, at five yards distant from the outer face of this rock, as well as north and south of it. As has been already narrated, the rock in question bears on its seaward face ample evidence of recent contact with an iron ship's bottom. But to bring the "Orion" to it upon her alleged course, it requires her to have passed the pier-head at only half her length off, say 38 yards, instead of her whole length off, unless we conclude that she retained her N. $\frac{1}{2}$ W. course in spite of the few spokes of the starboard helm given her, as she came abreast of the pier, but inoperatively in the short space between her and the said rock, and which did not exceed four times her length, nor require more than 50 seconds of time to be accomplished at her speed. No matter whether the "Orion's" track, or arriving abreast of the pier-head, sprang from the departure position, it is quite clear that a N. by W. course from the latter must strike the rock, and that a N. $\frac{1}{2}$ W. course would strike it from the former, and that even from N. by W. would hit the Barnock; in fact, no course less westward than N. N. W. would have done. As it was, the ship struck obliquely unluckily, instead of end-on; the latter would have transfixed her, the scraping, tearing collision (her engines being instantly thrown out of gear) very sensibly checked her flying speed of 13 or 14 knots, but left her sufficient way to forge a-head so near to the Barnock as to be lost sight of for a few minutes to Andrew M'Donall, who had hastened to the rocky chasm, called the Wilderness, after observing a steamer from Oakes Rail so alarmingly near the pier-head, with her course inclined towards the main. Hence the impression of the master and others on board, of the Barnock being the rock they struck on. It is manifestly reasonable their so thinking, nor does the fact of proving that it was a rock little more than three times the ship's length farther a-stern (a matter of 50 beats of a clock) impair the purity of their depositions. Nor is it more difficult to account for the "Orion" being found where she is, viz. equidistant, *i. e.* 156 yards from either rock (measuring from her foremast) though upon very different bearings, such as S. by W. from the Barnock, and N. W. $\frac{3}{4}$ W. from the Split Rock. In the former case, the tidal stream would drift her in the given time from the bilging contact to her place of sinking in nine minutes, and in the positive case, her impetus, biassed by starboard helm until she met with deadened way, the same tidal stream would cause her to describe the ellipsis I have diagramed on plan. There, at but 100 yards from the main shore, the stem of that stately vessel, with her living as well as costly freight, sank in the first instance. What followed is too well known; about 50 lives were lost in a quarter of an hour, and the "Orion" broke up on the 15th day. Some of her stores and cargo, as well as the chief part of the passengers' baggage, and several bodies, were recovered by divers, or as such floated up, and her remains were sold by auction on the spot for 330*l.* Her cost in 1847 was 46,000*l.*

It is clear that the second mate, John Williams, was, by his obstinate reliance on his own judgment, and when warned of his danger not amply attending to it,

it, nor, when under the very glare of a lighthouse, acting with presence of mind and common caution, the direct cause of the "Orion's" wreck. And as the master, Thomas Henderson, left her in charge of a mate without stipulating that the ship's course should not be altered without consulting him, and that too when the ship would be for the next two hours ranging along the most critical part of her voyage; with no accredited pilot on deck, but merely desiring the mate "to call him if the weather should become thick," tacitly approving the course then steering, and with reliance on any subsequent course the mate might think proper to adopt, he, the master, was indirectly the cause of the wreck of the "Orion." And inasmuch as the boats of the "Orion" were not available to succour the people on board, through want of anticipatory regulations to secure order and prompt service in the hour of needing the boats, so did further blame attach to the master; and, as respects the defection of boat service, blame also extends to the chief mate, George Langlands.

Report on the
Wreck of the
"Orion" Steamer.

Such was the conclusion of the law authorities of Scotland on the face of the depositions, and with reference to the palpable facts, that the master, first mate, and second mate were forthwith committed for trial on charges of "neglect of duty and culpable homicide."

Suggestions.

The "Orion's" case suggests (for averting the like disaster) the following official regulations: viz.

Firstly. That all coasting steam packets should carry a certified pilot for the coast their traffic line embraces, so that, when the master has occasion to leave the deck, the ship's safety would not devolve on a subordinate exercise of pilot discretion, and that accustomed authority of officer of the watch, in the same person. The skill required in the former, and the absolute power attaching to the latter office, may exist in one person, but should never be combined as duties. In the case before us it is certain that had the master or chief mate been on deck viewing John Williams as the pilot, or to viewing him, had a second or third mate been on deck in charge of the watch, either of them would in their priority of responsibility have stepped between him and his rashness and saved the ship; but as it was, he was absolute, and all that the third mate could do was to warn him: taking the helm would have been construed into mutiny; rushing to the captain would give mortal offence (if nothing happened after all), even though his interference averted the destruction. In a word, the pilotage of a ship is only ensured when under the eye of greater responsibility.

Secondly. The boats of all passenger vessels should occasionally be inspected by a Custom-house officer, or a Board of Trade surveyor, in order to ensure the number and size of them as prescribed by law, and that they are in good condition, properly equipped, and easily lowered to the water, and that the master has stationed the mates and crew to the best advantage amongst his boats for their separate constant care and efficient service on emergency; each boat to have a distinguishing number painted on her bows.

Thirdly. That the master be required to see that his boats are uncovered, their gear in place, and all clear for immediate use at sunset when out of harbour.

Fourthly. That it be required of owners and agents of passenger vessels that a list of all persons embarked be preserved at the port of departure of each of their vessels, and a copy sent by the first post to her destined port, so that, in case of total or partial wreck, those distracting doubts which hung over the "Orion's" case as to the extent and identity of her sufferers, may be within positive means of clearing up.

Fifthly. That the berthing tickets given to passengers shall conspicuously denote also the number of the particular boat to which the bearer of such ticket must resort in the event of being ordered by the commander to take to the boats, and that such a notice be exhibited in each berth. By such a distribution of order and forethought amongst the

Report on the
Wreck of the
"Orion" Steamer.

passengers, and systematic manning of the boats by the crew, the suicidal confusion I have had to recount from time to time as having prevailed when packets are wrecked, may at least be mitigated, if not averted. Certainly no man is nearer being perished because reminded of contingencies attending his position.

Sixthly. All passenger vessels should carry one life-buoy to every three passengers she is constructed to carry, and every deck cushion and mattress should be stuffed with cocoa-nut fibre or cork shavings. The life-buoys ought to be distributed in lockers fore and aft on the upper deck, with loose covers, so that they would float out as the ship foundered.

It may urge these suggestions into adoption, if I state that it is not the "Orion's" case alone, that has started a consideration of them; such will be found in a code of regulations, 33 in number, which I was moved to submit to my Lords in October 1848, as arising from my investigation of the cases of the steamers "Sirius," "Finn M'Coul," "Tribune," "Great Contest," "Senator," "Prince of Wales," "Royal Victoria," "Queen of Scotland," "Flambeau," "Vanguard," "Minerva," "Viceroy," "Border Queen," &c.

Portpatrick Light.

In closing this report, it is necessary to revert to what has been alleged respecting Portpatrick Light.

The second mate of the "Orion" asserts that

"The fact of the light at Portpatrick pier being shown from the inner tower, instead of the one at the pier-head, may have induced me to think I was as far from the pier-head as I was from the light itself, but which light is a long way within the pier-head, 387 feet."

The master ascribes the calamity to the situation of the light in positive terms; he says,

"As also the deceptive position of the pier light at Portpatrick, which unaccountably is exhibited from the inner tower instead of the outer one. Indeed, I am clearly of opinion, that had the outer tower been lighted, the 'Orion' would not have been lost."

Now, for the reasons given in this report, it cannot be admitted that the stranding of the "Orion" is attributable to the position of the light in question; nevertheless, as the position and nature of that light may be fairly questioned, and as on a former occasion, the loss of a vessel on the Ward Rocks, when running for Portpatrick from the north-westward, was alleged by the party to be owing to steering for the light under the impression that it denoted the south pier-head, and would therefore lead (on their particular bearing of it at the time) clear of the north pier-head; whereas the actual light being 127 yards farther eastward than supposed, the parallel course plumped them amongst the rocks at the back of the north pier, instead of guiding them to the harbour's mouth. Such charges or excuses for unskilful conduct and bad lookout, may from time to time be repeated, to the embarrassment of the guardians of this beacon light. The state of the subject appears to be thus:—The said inner light-house served to guide the coaster and the Irish packets, from the year 1790 until 1837, when the progressive harbour works under Government, having extended the south pier 437 feet seaward of the old light tower, it was deemed necessary to establish a light thereat, and accordingly a massive granite tower was erected on the cheesehead of the new pier, 387 feet in advance of the hitherto light. The light was exhibited at the outer tower until January 1839, when the heavy gale of that period so damaged the pier-head, as to endanger the foundation of the new tower, whereupon the old tower was re-lighted whilst the necessary repairs were accomplished at the pier-head, and since which, the pier-head and tower have stood the gales of succeeding winters stoutly, but its light has not been restored. The inner tower continues it the same as when its site denoted the original south pier-head. The position of the outer tower naturally exposes its lantern to the spray, at times, of a most turbulent sea, and which breaks so heavily upon the causeway of the pier, as to preclude access to it for hours together. This would render a relief of lighthouse-keepers necessary to

to ensure one being there all night, an arrangement common to all exposed lighthouses. The site of this lighthouse is certainly the legitimate position of the two for a guiding light, whether with reference to vessels coming into the harbour, or coasting. The fact of its occupying so jutting forth a position on the line of coast, of its consequent command of 24 degrees expansion of horizontal range more than the inner tower; of its 20 feet superior altitude, which whilst producing greater offing effect (if lighted) presents an obscuring medium between the inner light and the mariner, whenever he happens to be on the transit of the two buildings; and its adaptation to modern apparatus, such as ample sheets of plate-glass in metal frames, to enclose two tier of silver surfaced paraboloidal mirrors, illumined by argand lamps, which would transmit, even through clouds of spray, an intensity of light somewhat adequate to the 174 degrees of sea aspect it is open to (the margins of its range to be judiciously limited by abrupt maskings to 150° so as to indicate the dangerous proximity to Blackhead and Barnock Point on the one hand, or the southern trend of coast on the other hand, when on a clear night the light blinks, or ensure safety whilst it is actually open),* are a combination of circumstances, which, seeing too that the said tower is in a substantial condition to resume its first intention, for its lantern is prepared, its fitments were merely removed for preservation, and therefore exist for restoration, so that internal painting, and appointing a second lighthouse-keeper, being all that is required, may move their Lordships to confer with the Admiralty on the propriety of requesting the Commissioners of Northern Lights to re-establish the said pier-head light, instead of exhibiting Portpatrick light from a tower 387 feet inshore of it. At all events, if this suggestion is overruled, I submit that the present out-of-date lighting apparatus of the inner lighthouse ought to be replaced by modern fittings. Its light now depends on six lamps, without glass chimnies to steady the flame, or oil fountains to supply, but simply a broad flat wick inserted into a metal cup directly beneath, so that the flame is fed by capillary action alone; the reflectors employed to transmit those flaring smoky strips of light, are of the sort introduced in 1786, viz. facets of mirror glass, fixed in parabolical moulds of plaster. Inferior as such a sort of light must be in comparison with the coast lights of the present attainment of the art, it is subdued and impoverished by the rudely constructed lantern which embraces it, and which is formed of common window glass, of such small panes, as to present a mesh of framing to break and impede the rays of light, and which after all is confined in its divergence over the horizon to an arc of 66 degrees, although the glazed segment of the lantern embraces 150 degrees all right and left of the focal range of the mirrors, is but the feeble light of a common illumined chamber, nor is that defined by masking.

Report on the
Wreck of the
"Orion" Steamer.

Life Boat and Look-out.

It is matter worthy of official attention that although Portpatrick has been the seat of great public expenditure and of organized government establishment of officials, operatives and steam packets, until very recently, and by the zealous control of which Commander Hawes has on many occasions been enabled to succour the distressed vessels which in westerly gales must often be desired on this lee shore; yet few places characterized as a harbour and a town can be so ill provided with means of aid at or in its neighbouring creeks as Portpatrick is since the withdrawal of the packet establishment, and suspension of the harbour works.

At the time of the "Orion" splitting almost on the main, it was the merest chance that any person was awake to observe her. It was literally a restless invalid fisherman and the landlady of a public-house who happened to be up at the time, and saw her from their homes. There is not a night look-out or watchman, whether of Customs, Coast-guard, or Harbour-master, or pilot on any routine of duty at the port, nor is there any life-boat in the region.

Upon

* Effects to be produced by my plan of placing the reflectors in the rear, or concave part of the lantern.

Report on the
Wreck of the
"Orion" Steamer.

Upon this point Captain Hawes says, —

"The fishing-boats on this coast are small, and would not be able to render assistance in bad weather."

"During the five years I commanded at this port, I was frequently called on to send assistance to save life and property, and on the Government establishment being removed, I obtained permission to have retained at this port one of the large boats in case of accident, and which boat was of great service on this occasion, although manned only by promiscuous volunteers. I am now further convinced that there is necessity of having one or two life-boats at Portpatrick."

Buoy on the Wreck.

IN conclusion, I have to recommend that a wreck buoy be kept moored to the centre of the stern frame of the "Orion," until her engines and fabric are removed; and that in the notice of the same from the Commissioners of Northern Lights it be added, that it is necessary to keep the light eastward of S.E. by E., to clear the wreck.

WRECK OF THE "DUMBARTON CASTLE."

Report on the
Wreck of the
"Prince Arthur."

WRECK, with Loss of Life, of the Steamer "PRINCE ARTHUR," or "DUMBARTON CASTLE," off Southport, Coast of Lancashire, 4th August 1850.

REPORT of Captain *Denham*, R. N.

To the Right Honourable the Lords of the Committee of Privy Council
for Trade, &c. &c. &c.

IN pursuance of your Lordships' warrant and instructions, I forthwith proceeded to the locality of the wreck, and having investigated the circumstances attending the occurrence, and obtained depositions and other documents bearing on the case, I have the honour to state for their Lordships' information, that I find it presents the following facts:—

Firstly. That the said steamer was at the time of her wreck, and had been for the preceding three months, plying under the name of "Prince Arthur," although registered 10 years ago at Port Glasgow as the "Dumbarton Castle."

Secondly. That although the said steamer measured 133 tons, and proceeded to sea with passengers, she had not on board the number of boats required by the 3d section of 9 & 10 Vict. c. 100.

Thirdly. That during the current half year in which the said steamer was the property of Mr. Adam Rigby, of Liverpool (and wrecked on the 4th of August 1850), she had not been surveyed as required by the 14th section of 9 & 10 Vict. c. 100, and the 1st section of 11 & 12 Vict. c. 81.

Fourthly. That after the said steamer was wrecked, and loss of life attended it, no report of the event was transmitted to the Board of Trade, as required by the 19th section of 9 & 10 Vict. c. 100.

The said steamer was totally disabled whilst attempting an open sea trip with between 50 and 60 passengers on board; first, by the working of her hull tearing the starboard injection pipe from her side, and causing a leak which the engineer could not staunch, nor the pumping and baling means keep under, so that the boiler fires were drowned; secondly, that when bearing up for the nearest land, and steerage way was of vital consequence, the vessel was found to be deficient in every sea-going requisite. She had but one small unfitted jib;

jib; scarcely a bucket to bale with; no sounding head-line; and so slender a topmast that it could not sustain a flag of distress; in which condition it took her five hours to drift nine miles, all which time the leak was so gaining on the baling exertions of the passengers with every utensil they could avail of, even to the compass-boxes, that when the vessel struck the strand, her upper deck was under water. In this critical situation, with a flowing tide, it was found that the only boat on board would carry but eight people; and that had it not been for the zealous aid afforded by the fishermen of Southport, who, with two of their boats (which were drawn along the beach for two miles), launched off to the steamer in the breakers, few if any of the 50 persons on board could have been saved, so quickly did she break up. Fortunately the passengers attended to the exhortation of the master, who urged them to stick to the upper works of the wreck, in the hopes of the boats in view reaching them before they were washed off. But the engineer, George Pratt, disregarded the master's orders, and deserted his vessel on a plank raft he had contrived to possess himself of. The two firemen instantly followed the engineer, and were as instantly drowned. This act of the engineer was the cause too of the steamer's boat being rendered useless to the saving of more than the first eight of the passengers, through having to save him as he drifted along shore in a drowning state.

Report on the
Wreck of the
"Prince Arthur."

From the rapid way in which it is alleged this vessel broke up, and from the nature of the scattered debris, it is evident she was only constructed originally for river work. It is true that her owner went to the expense of certain repairs a very short time before announcing her as a sea-going passenger vessel to the Isle of Man, Coast of Wales, &c.; but it is very unlikely that any of the Board of Trade surveyors at Liverpool would have declared her to be seaworthy had the owner caused her to be surveyed according to law. The avowed pursuits of this steamer being that of a tug, the non-exhibition of a Board of Trade certificate was not noticed by the Customs,* and the surveyors, under the present enactments, not taking cognizance of any steamer's condition (never steam tugs) unless invited by the owner,* this vessel's irregularities were left, in the absence of accident, unknown.

Presuming that the accident in question would under surveillance have been averted, and adverting to the fact of there being several hundred steamers employed at our ports similarly situated, I submit with all deference, that the case is suggestive of a more extended and systematic supervision of our mercantile steam fleet of 1,100 vessels, than the present Acts provide for; and that in any future arrangements to that effect, no steamer of the mercantile navy should be exempted; and that the powers and duties of the official local surveyors should, under a general superintendent, extend to the inspection of a vessel and her regulation equipment, at any time it may appear desirable, as well as at certain fixed periods; and that in licensing vessels as to their number of passengers, it should be determined according to capabilities of vessels, and efficiency of equipment, master and crew, whether she might go beyond the harbour or river mouth or not. In the meantime, unmitigated infliction of the penalties incurred by the owner of the late steamer "Dumbarton Castle" will deter others from such practices, and do much towards averting the like accidents in future.

The master (Samuel Webster) pleads in extenuation of his neglect of duty towards the Board, that he was quite ignorant of the Steam Navigation Acts; and, moreover, that he does not know how to write, not even to sign his own name; and that neither his owner or agent advised him on the point of reporting the accident. It is not possible, however, to relieve his conduct as a seaman from animadversion, when we find that he proceeded to sea on a coasting voyage of 60 miles, 45 of which lay along a most exposed and shelterless seaboard, without a sail ready to set, a head-line to sound with, a gun to enforce a signal, nor a compass† that could be steered by. His want of judgment, too, when in peril, was distressingly manifested, first, by not bearing up for the nearest land when he found the leak was gaining on him, and that engine power was to be made the most of before the fires (situated only 14 inches above the keelson,) were drowned; secondly, by resisting the entreaties of the passengers to avail of the services

* *Vide* Captain Denham's Report "on Necessity of Systematic Supervision of Steamers."

† The pilot had to borrow one on the eve of starting.

Report of the
Wreck of the
"Prince Arthur."

services of a vessel which passed within hail, at the time their exigency was evident to themselves, and which in a few minutes after he admitted too; then, however, their united hailing and waving failed to attract attention; indeed, so unable were they in this steamer to exhibit a signal of distress, that she was drifting in a swamping state for three hours at from three to five miles off the Formby life-boat station without such a signal as according to the Liverpool Dock Trust regulations would warrant the life-boat captain in launching being distinguishable from the shore. Hence were they on board most grievously jeopardized from first to last of their embarking in this unseaworthy and ill-provided vessel.

The representation of the coroner of Lancashire, which craved of my Lords an official inquiry into this culpable case of shipwreck, embodied the recommendation of the jury, that "the Board of Trade should be further requested to extend their inquiry into the propriety of having the Southport channel buoyed." This request was transmitted to me with their Lordships' commands that it should form a part of my local investigation; I have obtained the requisite data for drawing up a distinct report thereon, and which shall be duly submitted by their Lordships' most obedient servant,

H. M. Denham.

CASE OF THE "VICTORIA."

REPORT of Inquiry into the Case of the Steam-Ship "VICTORIA," of Hull,
August 1848.

Report of the
case of the Steam
Ship "Victoria."

To the Right Honourable the Lords Committee of Privy Council for Trade,
&c. &c. &c.

This Report is submitted by Captain *Henry Mangles Denham*, R.N., F.R.S., their Lordships' Inspector of the said Steam Vessel Accident, by virtue of the Act 9 & 10 Vict., c. 100.

28 July 1848.

THE statement of this case, as transmitted to my Lords by the master of the said steam vessel "Victoria," on the 14th of July, was in substance a faithful narration, but the officially instituted inquiry has elicited points which bear out the appeal therein advanced; viz. —

"That, through their Lordships' intervention, a better chart may be published for the navigation of the Gulf of Finland, in which so much life and property is engaged."

It appears that the said steam ship was coming down the Gulf of Finland on her return to Hull from Cronstadt, under the command of Mr. Robert Paul Priest, and had arrived abreast *i. e.* 1½ miles north of Koksear Lighthouse at about 3 P.M. of the 23d of last June, when, in order to ease his ship from the head sea and current that opposed him, he determined to take the inner channel, so as to draw westward under the shelter of Nargan Island, which island, and all the beacons of that inner channel, he distinctly saw, so that his position was positive, and was familiar with locality from having navigated vessels for the last five years up and down the Gulf. He knew of the several marked shoals between his position at 3 P.M. and Nargan Island, that the Devil's Eye, with its north and south beacon flags, and the New Ground with its beacons, were the two first in his track, and but a league a-head of him; and in fact he saw those beacons; and had he adopted their indication, and given both the Devil's Eye beacons a berth on his starboard hand, and then hauled up so as to bring the Newcome beacons on his port hand, all would have been well; but having consulted

sulted his chart, he perceived 27 feet marked as the shoalest water over the Devil's Eye.* He at once disregarded it as a danger to his 13 feet draft, and caring more for a direct course towards Nargan, and keeping well to windward of the New Ground shoal, he actually steered a course that should pass between the south and north beacons of the Devil's Eye, though keeping closer to the southern beacons; and so at about 4.30 the ship struck, and became fixed on the stony shoal in question, with the south beacon about her own breadth on her lee port quarter; and from this perilous situation the ship was extricated in a manner that reflects credit on the master, crew, and passengers, but at the expense of throwing her coals overboard, unshipping her rudder, and damaging the stern-post and keel. She was got off the shoal in about an hour, and just as the wind shifted with increased force to the N. W., a change which would have proved fatal to her if not so speedily floated off, whilst on the other hand it aided her reaching Revel in her disabled state before dark, and where, as the master rightly anticipated, all the assistance and supplies requisite to pursue the voyage were handsomely afforded by the Russian Admiralty authorities. The Port Admiral, Count Heyden, immediately ordered the royal dock yard department to examine into, and undertake forthwith the requisite repairs; and the master says in his evidence, that neither for the liberal labour of gangs of hands, or for materials, was any charge made; moreover, he was permitted to coal from the Government depôt, at a considerable saving of expense to his owners, as well as important time, and for which he adds, "I feel grateful as a British subject."

Report on the case of the Steam Ship "Victoria."

As soon as the Port Admiral had provided for the relief of the British merchant ship's exigency, he appointed a court of inquiry into the cause of the accident. It is the custom of the Imperial Government so to do; but in this case, which had been witnessed by some officers from the adjacent observatory of Catherinedaht, a lively anxiety was incited, seeing that the steamer had struck on a shoal, which, by Government supervision, ought to be as properly beacons as the rest. The court of inquiry consisted of three captains of the Russian fleet then at Revel, the president being the captain of his Imperial Majesty's yacht the "Victoria," who, on examining the chart (Norries' of Leadenhall-street, dated 1848) which the master of the British steamer in question had depended on, remarked, that,

"With such charts as the British ships possessed, it was astonishing how they navigated their seas at all. As for their own ships, they had a set each from their actual surveys, supplied from their Admiralty, but could not be bought, being considered State documents."

But the master adds,

"I was, however, allowed to inspect one of those official charts, and to trace off the shoals I had passed through, and wherein it appeared that the Devil's Eye is known by their surveyors to have but 12 feet water on its margins, and as little as 9 feet on its N. W. angle, although Norries' chart of 1848 marks 27 feet on it. It is therefore to be prayed that the Russian Government would permit their actual surveys to be published, for the benefit of the mariner in general."

The fact of the master of the "Victoria" having struck on the shoal when steering on the shoalside of the southern warning beacon, but finding himself in deep water when drifting southward of the said beacon, satisfied the Russian naval officers that their beaconage was blameless in the case before them; and it would appear that their report to the Port Admiral was of a nature acquitting the master of blame (however it may appear to my Lords, as it does to their inspector, unjustifiable in a mariner to choose a passage between the beacons which

* In answer to the question, What book of sailing directions did he consult? he replied, "I had but Purdy's, and that merely speaks of such a shoal and its beacons, without noticing the draft of water on it."

And to the query, as to sounding? he replied, "We were not taking soundings, not being our custom by day, as none of the shoals in our track presented any gradual soundings."

Such may be inferred from the chart, but does not warrant the disuse of the lead when hugging shoals.

Report on the
case of the Steam
Ship "Victoria."

which are known to denote the extremes of a shoal, instead of passing on the obviously safe side of a shoal), for we find the Admiral condescendingly presenting him, in person, on board the said British steamer "Victoria" of Hull, with a certificate, to the effect that

"Captain Priest (the master of the disabled steamer), having had the misfortune to strike on the shoal called the Devil's Eye, he, the Port Admiral, Count Heiden, certifies it was not by his negligence, but by an error in the chart he possessed."

It is also tendered in proof of the accident being attributable to an erroneous chart, the certified opinions of certain of the passengers who were so perilled, including three envoys, viz. Prince Lomonosoff, Count Moltky, and General Oxholm, who happened to be taking passage in the said steamer, and their Excellencies testify to the effect thus:—

"As to the misfortune happened to the steamer the "Victoria," on her voyage from St. Petersburg the 22d of this month, we have in so far nothing to reproach Captain Priest, as the road he took is indicated on the chart as practicable. Copenhagen, 27th June 1848."

Looking then at the concurrent opinions of the local official authorities, that the charts which British ships are provided with are erroneous, and comparing the actual chart with the extract from the Russian Admiralty chart, by which we find that the chart published, even in the present year, with the following title,

"A new chart of the Gulf of Finland, surveyed by order of the Emperor of Russia and King of Sweden, with additions and improvements, by J. W. Norie, Hydrographer, &c. Additions to 1848. Published as the Act directs, at No. 137, Leadenhall-street, London ;"

But which chart marks 27 feet water on a shoal (the Devil's Eye), where a vessel of 13 feet grounds, and where as little as 9 feet water is denoted on the official chart it professes to represent, afford an especial case for suggesting an application to his Imperial Majesty's Government for copies of the Russian Admiralty surveys, for the purpose of providing British ships with correct charts of the Gulf of Finland.

By the institution of this inquiry, my Lords are put in possession of a gratifying instance of foreign succour and generous aid afforded to a trading ship of Great Britain, which would not otherwise have been officially recognised, although eliciting the gratitude of the owners, commander, and crew and passengers of the disabled steam ship in question.

The investigation also presents another instance of the risks which our mercantile marine* are exposed to by the use of unauthorised charts, and suggests that no chart should be published by private parties without an authorised stamp resulting from official censorship.

(signed) *H. M. Denham*, Captain R.N.

12 August 1848.

* Indeed, our Royal Naval Marine too, as by a letter from the Secretary of the Admiralty, the charts of the shops are deemed apparently correct copies of the Swedish and Russian Surveys, and that the Admiralty has not compiled or published any of that sea.

LIGHTS FOR STEAMERS.

When under Weigh:

- A Bright White Light on the Foremast Head.*
- A Green Light on the Starboard Bow.*
- A Red Light on the Port Bow, to be fitted with onboard Screens.*

When at Anchor, Steamers and all other Vessels;

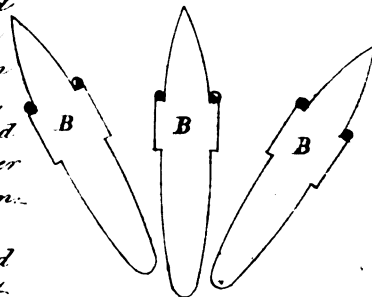
- A Common Bright Light.*

The following Diagrams are intended to illustrate the working of the above Plan.

1st Situation.

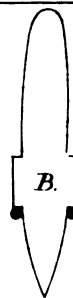
In this situation the Steamer A will only see the Red Light of the Vessel B, in whichever of the three positions the latter may happen to be, because the Green light will be hid from view. It will be assured that the larboard side of B is towards him, and that the latter is therefore crossing the bows of A in some direction to Port. A will therefore (if so close as to fear collision) port his helm with confidence, and pass clear. On the other hand, the Vessel B, in either of the three positions, will see the red, green, and mast head lights of A appear in a triangular form, by which the former will know that a Steamer is approaching directly towards him. B will act accordingly.

It is scarcely necessary to remark that the mast head light will always be visible in every situation till abaft the Beam.



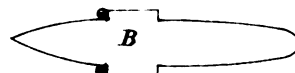
2nd Situation.

Here A will see B's green light only, which will clearly indicate to the former that B is crossing to starboard. Again A's three lights being visible to B, will apprise the latter that a Steamer is steering directly towards him.



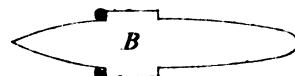
3rd Situation.

A and B will see each others red light only. The screens preventing the green lights being seen. Both Vessels are evidently passing to Port.



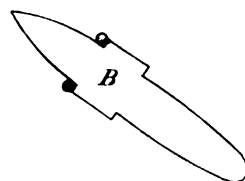
4th Situation

Here a green light only will be visible to each: the screens preventing the red lights being seen. They are therefore passing to Starboard.



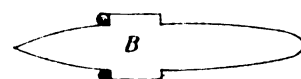
5th Situation.

This is a situation requiring caution: the red light in view to A, and green to B, will inform both, that they are approaching each other in an oblique direction. A should put his helm to port, according to the standing rule mentioned in the next situation.



6th Situation.

Here the two colored lights, visible to each, will indicate their direct approach towards each other. In this situation it ought to be a Standing Rule that both should put their helms to Port. This rule is already pretty generally adopted; but it would add to safety if it were made imperative: for it is evident, that without some rule of this kind well understood and practised, it will be impossible to guard at all times against accidents in the situation of the two Vessels here given.



SUPERVISION OF STEAMERS' LIGHTS.

Report on the
Supervision of
Steamers' Lights.Captain *Denham's* REPORT on the Necessity of the SUPERVISION of STEAMERS'
LIGHTS.Office of Committee of Privy Council for Trade,
Whitehall, 13 August 1849.

Sir,

I AM directed by the Lords of the Committee of Privy Council for Trade to transmit to you the accompanying letter from the Admiralty, with its enclosure, on the subject of the inefficient state of the lights of steam vessels at the port of Liverpool.

I am to convey to you the desire of my Lords that you should, whilst at Liverpool, and the other parts to which you are about to proceed, direct your attention to this subject, and that you will communicate with the surveyors approved by this Board, under the 14th section of the Steam Navigation Act, with a view of ascertaining how far their services may be made available for carrying out the regulations laid down by the Lords of the Admiralty relating to steamers' lights.

Captain Denham, R.N.,
&c. &c. &c.

I am, &c.
(signed) G. R. Porter.

LIGHTS FOR STEAMERS.

Admiralty, 13 December 1847.

THE great increase in the number of steamers, and the want of an adequate and uniform plan of lights, has of late years occasioned an infinity of accidents from vessels running foul of each other in the night, involving, not only a serious destruction of valuable property, but also a melancholy loss of human life, and without the most diligent and attentive consideration, as to the best plan to be adopted to obviate such disasters, the evil is likely to increase.

To nautical men it will readily appear that the generality of the accidents alluded to is attributable to the want of means to ascertain promptly the direction in which a vessel may be steering, at the moment she is first discovered, at night; for, when a ship's light is first perceived in a dark night, the observer is merely informed that there is a vessel in the direction of that light, but he is still ignorant of the course she may be steering. He has no means of ascertaining immediately (what is all-important at this critical moment), whether the strange sail may be steering directly towards him, or whether she may be standing in some direction across the bows either to starboard or to port. In this doubt, the helm is frequently put the wrong way, and a collision is the consequence, but another, and perhaps the first and most important point to determine is, whether the light when seen is that of a steamer, and if so, whether she is under weigh.

Here then is a palpable defect in every mode of night-signals hitherto adopted—the evident source of frequent damage and loss of life.

To remedy this deficiency nothing more would appear to be required, than that the same light which announces the approach of a vessel in the dark, should not only indicate that it is a steamer, and under weigh, but should also point out the direction of her head.

With a view to supply this great desideratum, the following is the plan intended to be generally adopted—(*Vide* Diagrams, opposite.)

The manner of fixing the coloured lights should be particularly attended to. They would require to be fitted, each, with a screen of wood or canvass on the inboard side, in order to prevent both being seen at the same moment from any direction but that of right a-head.

This is important, for without the screens (a principle first introduced with this plan), any plan of bow-lights would be ineffective as a means of indicating the direction of steering.

This will be readily understood by a reference to the preceding illustrations, where it will appear evident, that in any situation in which two vessels may approach each other in the dark, the coloured lights will instantly indicate to both the relative course of each,—that is, each will know whether the other is approaching directly or crossing the bows, either to starboard or to port. This intimation is all that is required to enable vessels to pass each other in the darkest night, with almost equal safety as in broad day, and for the want of which so many lamentable accidents have occurred.

It might prove of infinite service, combined with the above plan of lighting steamers, if all sailing vessels were provided with a green and a red lantern, to be shown by hand on the starboard or port bow, according to the side on which a vessel might be approaching.

If at anchor, all vessels, without distinction, to exhibit a common light.

1 November 1849.

It is suggested that clauses 12 and 13 of the Act of 9 & 10 Vict. c. 110, should be inserted here, but that the words "within 20 miles of any part of the coast of Great Britain and Ireland," should be repealed, and that it be enacted that no other lights be exhibited than those ordered by the Admiralty.—*H. M. Denham*, Captain, R N.

LIGHTS FOR STEAMERS.

[Extract from a Letter addressed to the several Superintendents of Her Majesty's Dock Yards.]

Admiralty, 15 December 1847.

THE attention of the Board of Admiralty having been repeatedly called to the necessity of establishing a uniform system of lights for steamers, directions were given (after a long and careful series of trials of various lights,) to fit the several mail steamers on the west coast of England, viz. those of Liverpool, Holyhead and Pembroke, with lights, as follows :—

When under weigh.

A bright white light on the foremast head.

A green light on the starboard bow.

A red light on the port bow, to be fitted with inboard screens.

When at anchor (steamers and all other vessels), a common bright light.

On the above plan being notified, it was adopted by several steam-boat proprietors, and the vessels of the steam companies named below are fitting, or are already fitted, with these lights.

1. The British and North American Royal Mail Company.
2. The British General Steam Packet Company.
3. The Glasgow and Liverpool Steam Packet Company.
4. The Chester and Holyhead Company.
5. The Peninsular and Oriental Steam Packet Company.
6. The West India Royal Mail Steam Packet Company.

The experiments thus made proving satisfactory, the Board of Admiralty have given directions that all steamers in Her Majesty's Navy shall be fitted with the above coloured lights and screens; the lanterns being divided into two sizes or classes.

An Act having been passed in the 10th year of the reign of Her present Majesty, intituled, an Act, &c. requiring, "that the Lords Commissioners of the Admiralty shall institute and establish certain lights, to be exhibited by all steam vessels belonging to Great Britain," it is the intention of the Board of Admiralty to issue regulations for the above lights being exhibited by all steamers navigating the coasts and channels of this country; but sufficient time will be given for the owners and masters of steam vessels to become acquainted with

with the plans, before the notice is published in the London Gazette, requiring them to show these lights, and this will probably be in the month of March next. In the meantime every facility will be afforded to masters and owners of steamers desirous of becoming acquainted with the plan, by furnishing such as may apply for it with a full description of the lights; and for the guidance of persons interested in the above plan, a diagram illustrative of the system is sent herewith.

Report on the
Supervision of
Steamers' Lights.

If it should be desired an officer will be sent to give the requisite instructions as to the proper placing of the lights and screens.

Sir,

Admiralty, 30 July 1849.

I AM commanded by my Lords Commissioners of the Admiralty to transmit to you, for the information of the Lords of the Committee of Privy Council for Trade, with reference to a proper inspection and superintendence of steamers' lights, the accompanying copy of a letter from Mr. Miller, and its enclosures, relative to the inefficient state of the lights of steam vessels at the port of Liverpool.

G. R. Porter, &c. &c. &c.
Board of Trade.

I have, &c.
(signed) *W. A. B. Hamilton.*

Sir,

179, Piccadilly, 23 July 1849.

WE have just received two letters from Liverpool, the contents of which we consider of so much importance, as showing the neglected and inefficient state of steamers' lights at that port, that I take leave most respectfully to submit them for your consideration.

These letters only refer to the port of Liverpool, but we have good reason to know that at all the other ports from whence steamers ply, the Admiralty regulations on the subject are equally neglected or evaded.

We beg to draw your attention to the fact, that Mr. Lamont, the writer of one of the letters, is the principal manager of an important Steam Packet Company, and is therefore in a position to be well acquainted with the subject on which he writes.

Captain W. A. B. Hamilton, R.N.,
&c. &c. &c.

We have, &c.
(signed) *Miller & Co.*

Gentlemen,

Liverpool, 20 July 1849.

WHEN the Admiralty order made its appearance (29 June 1848) we waited upon all the Steam Packet Companies here, and to our surprise they almost all universally replied that they would put coloured glass in their present lamps to comply with the order, but would not go to any further expense unless compelled. In vain we stated that such a procedure would only increase the evil which the Admiralty were so anxious to remove, and drew their attention to the order wherein the first and second conditions, and those most important, would not in reality be complied with. It was of no use; this contemptible economy carried the point, and the lives of thousands placed in daily jeopardy. Cannot you bring this before the Board of Trade? We can assure you that we speak within the mark, when we state that not one in ten is efficiently lighted, or carries out the conditions of the order. We see no way in which the Admiralty order can be enforced but by the appointment of an inspector. We enclose you a letter, received from Mr. Lamont, which bears strongly on the point.

Messrs. Miller & Co., London.

We are, &c.
(signed) *Forrest & Bromley.*

Report on the
Supervision of
Steamers' Lights.

Glasgow and Liverpool Royal Steam Packet Company,
Liverpool, 20 July 1849.

My dear Sir,

I REALLY cannot with any pretension to accuracy give you any idea of the number of steamers having efficient lights; there are a large number, however, which carry lights that will not stand the test, and I see no reason for altering my opinion expressed at the time when the system was adopted, in one of my communications to the Admiralty, that a person should be appointed at each principal port to inspect and pass the lights if efficient, or *vice versa*.

It might easily be arranged that the surveyors of steam vessels already appointed by the Board of Trade, and who are required to inspect and report each half year to that Board on the condition of the hull and machinery of all sea-going and river steamers carrying passengers, should have instructions sent them to include also regarding the efficiency and proper position of their lights in their report.

In this way the machinery at present in operation could be made to do the necessary work, without incurring any additional expense to any party.

I am, &c.
(signed) *Robert Lamont.*

Steam Navigation Department, Board of Trade,
30 October 1849.

Sir,

IN pursuance of the desire of the Lords of the Committee of Privy Council for Trade, dated the 13th of last August, viz.—

“That I should, whilst at Liverpool and the other ports to which I was about to proceed, direct my attention to the subject of the inefficient state of the lights of steam vessels, as referred to in accompanying letter from the Admiralty, and certain enclosures; and that I should communicate with the surveyors approved by their Lordships under the 14th section of the Steam Navigation Act, with a view of ascertaining how far their services might be made available for carrying out the regulations laid down by the Lords of the Admiralty relating to steamers' lights;”

I did accordingly obtain such particulars, by actual inspection of vessels, and conference with the said surveyors at the ports of Liverpool, Bristol, and Glasgow, as enables me to confirm the allegations set forth in the documents which you forwarded to me, and which are to the effect,

“That an alarming number of steam vessels, belonging to or trading with those ports, are at this date either in ignorance of, or disregarding, or inefficiently observing the system laid down and officially promulgated in Gazettes and Circulars by the Lords Commissioners of the Admiralty, under date of 29th of last June twelvemonth, for the uniform and effective denoting lights on board all steam vessels.”

To enlist the services of the several local surveyors on so important a provision of the Steam Navigation Act, I was essentially aided by their zealous response; their thorough conviction of the necessity of supervision on the subject; their ready comprehension of rules, and the design of the diagram; and their unhesitating belief that they could establish and effectually preserve the due observance of the said designed fittings, if empowered to blend it with their usual surveys, or when necessary, at intervening periods of those surveys.

On eliciting the foregoing disposition in regard to the proposition of my Lords, I first invited the surveyors collectively to an inspection of those vessels which were properly fitted; to those vessels bearing the semblance of the plan; and to those that were in effect perverting and confounding the design; and having impressed them in the course of our inspection with the truly simple application of the Admiralty diagram, so much so that certain vessels were corrected during our visits to them by their own artificers, and having experimented on the several lights employed by the parties, I secondly enjoined them to consult together upon the points of inspection, fitting, and lighting, and convey to me their views by the time I should have returned to office from
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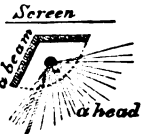
the tour of the ports: this they have eventually done, as annexed, and in which the following paragraphs appear to our purpose:

“ At Liverpool (*vide* No. 1) unanimously agreed that the surveyors should undertake the additional duties proposed.

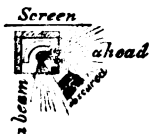
“ The surveyors do not think it necessary to recommend any particular form of lamp hitherto adopted. They would however suggest, that for bow lights one piece of spherical glass be used only, so as to show a perfectly unbroken light; and for the mast-head light, two pieces of similar glass, joined in the middle.

“ They think it highly important that the bow lights should be placed as nearly abreast of the foremast as the fore shroud or gangway will admit. This modification, as respects ferry-boats, will require consideration, especially with those constructed to steer at each end, and have no masts.”

By one piece of spherical glass for the bow lights is meant, that the required range of light being transmitted through a coloured lens (red on the port side, and green on the starboard), which shall present a segment of the circle equal

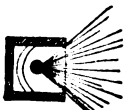
to 112 degrees (thus ) , there will be, as designed and ordered by

the Admiralty, an “ unbroken ” light diffused over 10 points of the compass, *i. e.* from right a-head to two points abaft the beam, instead of, as in many instances now, the broken light consequent on using a flat glazed lantern of a right angle surface, with the rays of light transmitted by reflectors

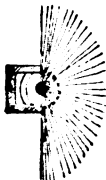
(thus ) , themselves (the reflectors) of limited focus, and the radia-

tion blocked by the upright jamb which connects the bow-angle of the square, and whereby an obscuration of light ensues on the bow aspect.

What is meant by two pieces of spherical glass joined in the centre for the mast-head lantern, is to obviate the unsatisfactory effect of those mast-head lanterns which, by being flat faced and only glazed in front, merely emit

the rays of its reflector, however powerfully, right a-head (thus  a-head)

without reference to the no less important portions of the horizon on either beam, and therefore disregarding that essential provision of the Admiralty regulation, *viz.*, that the mast-head light shall show a uniform and unbroken light over an arc of the horizon of 20 points of the compass, *viz.* from right a-head to two points abaft the beam on each side of the ship. Here then the lens is the remedy; some parties are adopting it, but not uniformly; the object of two pieces is cheapness. The obvious effect of a lantern constructed thus

 would be to diffuse uniform light over the required arc of 224°.

The suggestion in the Liverpool Report, that “ the bow lights should be placed as nearly abreast of the foremast as possible,” arises from the manifest distortion which the diagram undergoes in proportion to the paddle-boxes being abaft the foremast, and in reference to those vessels in which the old custom of treating the bow lights as paddle-box lights is persisted in. In some vessels, so placing the intended bow lights throws them 30 feet abaft the perpendicular of the mast-head light, whereas, for obvious reasons, they should come into the same vertex when seen from a-beam; such an arrangement for denoting the course of the observed steamer at night would likewise ensure cabin shelter for trimming the bow lights, instead of exposing them unnecessarily elevated on

Report on the
Supervision of
Steamers' Lights.

the paddle-boxes: indeed, this suggestion confirms the representation on the subject in my report on the disastrous collision between the "Rob Roy" and "Unicorn." The further remark of the Liverpool surveyors, touching the ferry-boats, which steer at either end and have no masts, shows equal discernment and anxious attention to the subject. With such vessels, the funnel, which is nearly amidships, would represent the mast-head light, and might turn forward on a traversing hoop alternately, and the side light on the apex of the paddle-boxes (with three feet of screen board each way on line of keel, fixed on the inside parallel of the lanterns), could turn on a socket as required.

Vide No. 2.

The Bristol surveyors state, that the examination of the lights should form simply part of our inquiry at the time of the half-yearly surveys respectively; but in order to a more effectual control in the matter, the surveyors should also be empowered to examine into their condition at closer periods. In all cases in which it can be done, we think the side or bow lights should be placed in houses, and that a spare set of lamps should be kept on board; the lamp houses should be well ventilated. We would also state, from our own knowledge, that the tradesmen of this city could supply proper lamps; we do not however consider the system of lighting can be called complete until sailing vessels are required to have them of a proper description, and are provided with the regulations respecting steamers' lights; and we suggest that a copy of the regulations and diagram be furnished to each vessel, and that the surveyors be instructed to require the production of the same at the time of survey."

Their Lordships will recognize in these extracts from the Bristol surveyor's report, the points which I have urged in my reports on collisions, viz. the necessity of protecting the bow lights in cabins, *i. e.* lamp houses, the necessity of duplicate lanterns ready trimmed, the imperative necessity of compelling sailing vessels to exhibit lights on discovering a steamer; without which it is of little use that she sees the steamer lights; and the obvious necessity of requiring all vessels to possess copies of the enactments and rules regarding such. The Clyde surveyors say,

"We shall be glad to co-operate, by blending with our other duties in the supervision of steamers' lights; and from our observation of the explanations and practical illustration of the plan of those lights, as exhibited to us under your direction on board of the several steamers we visited with you, we are of opinion that the plan was so satisfactorily explained, that we perfectly comprehend it. It would be very desirable that we should be furnished with copies of the Act of Parliament and diagram, in order to show such to any owners or masters who might demur; and power should be given to the surveyors to order proper fitments within a reasonable time, or otherwise to report to you their names. The use of refracting lenses to produce an unbroken range of light, we are of opinion is the best mode that has hitherto come under our notice; we recommend their general use, and the manufacturers of Glasgow and Greenock could produce abundance of such lenses.

"We are aware of a number of steamers not fitted with the required lights, and are of opinion that if they were universally adopted, such would be a means of saving life and property.

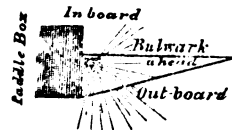
"We would further suggest, that all sailing vessels should be compelled to adopt some uniform mode of showing lights while in the Channel or rivers, or whenever in the track of steamers, as we are aware that several collisions have recently occurred in consequence of craft, when danger appeared, merely showing a lighted candle in a lantern, which cannot be observed until too late."

Here also are admitted the urging points for stringent supervision. Three sets of surveyors, whose local observation and opinions arise, hundreds of miles apart, concur in the absolute necessity and practicability of establishing a forth-with conformity with the simple, efficient, but hitherto much disregarded plan, for universal steam vessel denoting lights; they express their thorough comprehension of the plan; they are convinced of its vital importance; they perceive its adoption to be impeded for want of that explanation of its benefits, its inexpensiveness,

pensiveness, and the immunity it carries, or if neglected, the penalties and criminal consequences of accident arising therefrom; all of which they cheerfully undertake to attend to in response to the invitation of my Lords, and only await due authority being attached to their present appointments, and a supply of the Admiralty circulars on the subject, which circulars I submit should have the 12th and 13th clauses of the Act of 9 & 10 Vict., c. 100, (leaving out the words "within 20 miles of any part of the coast of Great Britain or Ireland,") inserted at the foot of the said rules.

I had to disabuse the owners, agents, and commanders, of an impression they were under, that because Admiralty approval attended the construction of "Miller's Lanterns," so would it be necessary to obtain them, and no others. I perceived a disposition to demur at such an official stipulation on the one hand, whilst on the other, it was pleaded as an excuse for wishing to wear out their old lamps before going to the expense of the London fitments as they termed them; I therefore took pains, in the presence of the surveyors, to assure them of no such official stipulation having been expressed, but that, so the lanterns were equal to the lens pattern of Miller & Company, whether made in London or out, official expectation would be satisfied, and their own interests would be best consulted by losing no time, nor sparing expense in providing themselves somewhere with unobjectionable lamps; whereupon the City of Dublin steam-packets agent, Lieutenant Sarsfield, presented to my inspection, testing the same when lighted, lanterns of their own construction, which by ample hollow lenses filled with coloured liquid (red and green) transmit with refulgence the indicating colours desired. This is a vast improvement compared with the thick stained glass shields. Good lanterns were also produced of A. & R. Brown, of Liverpool; while at Bristol and Glasgow I found excellent specimens of the manufacture of Simmons, and of Gray; hence the remark in the surveyors' reports of their seeing no difficulty as to the local supply of efficient lights. I should notice, however, that for want of instruction and inspection, as much error lies in the placing the lamps and screens, as in the absurd pretensions of the lighting means which some employ, for even candles and common swinging oil troughs are used, enclosed within panels of plain glass, the feeble tinted rays of which are soon subdued by its own smoke; but even the best lamps are in some instances perverted in the true object, by the screens being omitted, or of the wrong dimensions, and sometimes by being placed thought-

lessly in the angle of the paddle-box, thus



obviously ex-

cluding any light abaft the beam. Others place them on the most exposed part of the paddle-boxes, where a sea may dash the light out (as in the fatal case of the "Unicorn," of Hull), or sweep away the screen; others persist in carrying a light at the stem, to the confusion of the ordered diagram of a vertical triangle of lights; some deem it enough to transmit light a-head only, and some affect to believe that the power of their lights may reasonably be less in small steamers than large ones, when in fact it is, if anything, more important that the larger and swifter vessel should discern the movements of the smaller at the greatest distance.

Such are the inconsistencies and culpable errors in the application of one of the most vital features of the Steam Navigation Act, which in a degree are alleged to exist in the letters sent to their Lordships by the Board of Admiralty, and which certainly demand forthwith personal attention, first to initiate the surveyors, and afterwards to check by inspection any innovation or infraction; by no other process can the Admiralty's recommendation to my Lords be carried out. Submitting the foregoing by command, and with all deference,

I have, &c.

Sir Denis Le Marchant, Bart.,
&c. &c. &c.
Board of Trade.

(signed) *H. M. Denham, R. N.*

(No. 1.)

THE Surveyors of Steam Vessels for the port of Liverpool, appointed by the Board of Trade, having been requested to confer with Captain Denham, R.N., in order to ascertain whether they, the surveyors, be individually disposed to include in their duties the examination of steamers' mast-head and bow lights, and to elicit their opinion as to the best means of securing that the regulations of the Admiralty with regard to the lights be fully carried out; a meeting of surveyors was held at the Custom-house on the 4th day of September instant.

Present:—Mr. Vernon, Mr. Dawson, Mr. Hebson, Mr. Coppin of Londonderry, Mr. Grayson, Mr. Wilson Green,

When it was unanimously agreed that the surveyors should undertake the additional duties proposed.

The surveyors do not think it necessary to recommend any particular form of lamp hitherto adopted; they would, however, suggest, that for the bow lights one piece of spherical glass be used only, so as to show a perfectly unbroken light; and for the mast-head lights, two pieces of similar glass joined in the centre.

They think it highly important that the bow lights should be placed as nearly abreast of the foremast as the fore shroud or gangway will admit. This recommendation may require modification as respects ferry-boats, especially those constructed to steer at each end, which have no masts.

(signed)

*Thomas Vernon.**John Dawson.**Douglas Hebson.**William Coppin.**Chas. Grayson.**John Wilson Green.*

Liverpool, 4 September 1849.

(No. 2.)

Bristol, 22 August 1849.

WE, the undersigned, having been requested by Captain Denham to express our opinion as to the practicability of our examining the manner in which the regulations of the Board of Trade with regard to the lights of steam vessels are observed; and also of our exercising a general supervision with a view to obtain as much efficiency as possible in this important matter.

It appears to us that there would be no difficulty whatever in our undertaking this duty, and that the examination of the lights should be made simply to form part of our inquiry at the time of the half-yearly surveys respectively. But in order to a more effectual control in the matter, the surveyors should also be empowered to examine into their condition at closer periods, whenever in fact an opportunity might arise for doing so.

And for the purpose of securing an immediate compliance with the regulations before the ordinary surveys can be held, the better way would be to instruct the surveyors to attend collectively to the matter.

In all cases in which it can be done, we think the side or bow lights should be placed in houses; and when this cannot be effected, that a spare set of lamps should be kept on board; and further, that the use of plate glass should be encouraged as much as possible, instead of bull's-eyes, the light from the latter being often very obscure.

It will be very necessary that the thorough ventilation of lamp-houses and lamps should be insisted on, as the lights are frequently inefficient from this cause.

We would also suggest that a copy of the regulations, diagram, &c. be furnished to each vessel, and that the surveyors be instructed to require the production of them at the time of survey.

We

We have further to state, that from our knowledge of the tradesmen of this city, there would be no difficulty in procuring the necessary supply of lamps proper for the purpose.

We moreover do not consider that the system of lighting can be called complete, until sailing vessels are required to have a lamp of a proper description on board, and are provided with the regulations respecting the lights of steam vessels.

(signed) *B. H. N. Green.* } Surveyors approved by the
James Wood. } Lords Committee of Privy
Wm. Patterson. } Council for Trade.

Captain Denham, R.N.

Report on the
Supervision of
Steamers' Lights.

(No. 3.)

Sir,

Greenock, 12 October 1849.

WE should ere this have taken an opportunity of reporting to you on the subject of the conference you were pleased to summon us to attend at the Custom-house, Glasgow, on the 5th ultimo, conjointly with Messrs. Robertson, Barclay, and Curle, the other surveyors appointed by my Lords of the Privy Council for Trade, for the periodical survey of all steamers plying in the Clyde with passengers; but have waited expecting to be joined in our report by the several parties above named as was proposed, and as we understood, agreed upon at the close of the conference alluded to; they have however intimated to us that it is not their intention to make any report at present, and we beg to submit our mutual opinion.

We shall be glad to co-operate and blend with our other duties a supervision of the lights of all steamers coming under our survey, as ordered by the Lords of the Admiralty; and from our observations of the explanations and practical illustration of the plan of these lights exhibited to us under your direction on board of the several steamers we visited with you on the day above named, we are of opinion that the plan was so satisfactorily explained, that we perfectly comprehend it; and it would be very desirable that we should be furnished with copies of the Act of Parliament and diagrams, in order that we might, when required, furnish the owners or masters of any of the steamers who might demur to having these lights fitted in accordance with the plan shown; also that power might be granted to the surveyors to order proper fitments within a reasonable time, or otherwise to report to you the names of such steamers, their owners or masters.

We are aware that a number of the steamers plying on the Clyde at present are not furnished and fitted with the required lights, and we are of opinion that if this were universally adopted, it would be the means of saving both life and property: and it appears obvious to us, that when the parties themselves understand the principle and the object in view, they would necessarily adopt it for their own safety.

With respect to the use of refracting lenses in producing an unbroken range of light, we are of opinion that this is the best mode that has hitherto come under our notice, and we should recommend its general use. The manufactories of Glasgow and this port, we are confident, produce abundance of such lenses as we conceive would be efficient for every requisite purpose.

We would only further take the liberty of suggesting, that all sailing vessels should be compelled by Act of Parliament to adopt some uniform and universal mode of showing lights while in the Channel or rivers; and when they come in the track of steam vessels, as a means of preserving much life and property, as we are aware that several collisions have recently occurred in consequence of small craft on this river, when danger appeared, showing a lighted candle in a lanthorn, which cannot be observed until too late, particularly if the weather be at all hazy.

We are, &c.

(signed) *John B. Cumming.*

Captain Henry Mangles Denham, R.N.

SUPERVISION OF STEAMERS.

Report on the
Systematic Super-
vision of Steamers.

Captain *Denham's* REPORT on the SYSTEMATIC SUPERVISION of STEAMERS.

Steam Navigation Department, Board of Trade,
19 February 1850.

Sir,

IN pursuance of the desire of the Lords of the Committee of Privy Council for Trade, dated on the 26th of last December, to the effect that, whilst engaged in the investigation of certain steam vessel accidents, I should place myself in communication with the surveyors of the ports under the 14th section of the Steam Navigation Act, "With a view of ascertaining how far their services might be made available for carrying out the regulations laid down by the Lords Commissioners of the Admiralty with respect to the exhibition of denoting lights on board all steamers;"

I took the opportunity of conferring with the said surveyors at the ports of Leith, Newcastle and Shields, Sunderland, Hull, Yarmouth, Ipswich, Portsmouth, and Southampton, and I have now the honour to report my course of proceedings and the results accruing.

I made it my first business, on reaching the several ports, to explain the object of my Lords to the Collector of Customs, and to request that I might appoint the Custom-house as the place of conference with the surveyors. This was accorded on each occasion in the most cordial manner, as well as the service of a messenger, and the returns I had occasion to ask for; and which co-operation did not fail to clothe my commission with an official consequence productive of that alacrity in attendance and spirit of communication, which enabled me in the least possible time to elicit the herewith appended statements.

I opened each conference by laying my Lords' proposition before the surveyors, and discussed it as an invitation which should move them to weigh its important object, how the perception and fittings lay in the shipwright's province, and how clear should be their formal response.

I then explained to them the practical arrangement and operation of the Admiralty system, as set forth in the diagrams and gazetted instructions, copies of which I supplied to each of them. We then weighed the force and penalties of clauses X., XI., XII., and XIII. of the Act of 9 & 10 Victoria, c. 100, which bear so directly on the question of lights on board of steamers; and having agreed upon the tenor, I took the surveyors to every variety of light-fittings which the steamers then in port presented, and pointed out the few who were perfect, the indifferently fitted, and the wholly neglected instances; with the simple criterions which lead the most cursory survey to detect infraction; how a few minutes instruction could set some right; or, when obstinacy and contumely were arrayed, how the party should be admonished, if not at once visited with the penalties.

It was extremely satisfactory to hear their perfect acquiescence in all I had to draw their attention to, and with what a purpose-like spirit they subscribed to a response, framed as follows:

"The undersigned having met Captain Denham, R. N., at this port by appointment, and he having read to us the Board's proposition, and having explained to us the nature of the fittings and the desired operation of all steamers' lights,

"We have no hesitation in asserting our belief, from local experience, that such official supervision is vitally necessary to ensure uniformity on so important a point in navigating our rivers and coasts, as well as the high seas. And the said system as diagramed by the Admiralty being perfectly within our comprehension, hereby undertake to blend it with our usual duties as surveyors."

In this place I should revert to similar results at some of the ports on the west coast, where I was similarly instructed, to confer with the surveyors on the 27th of last August, with direct reference to an Admiralty request, whilst I was engaged on the Irish immigration question. I reported in detail, on the 6th of last November, the cogent reasoning of which, in regard to a forthwith supervision

supervision of the lights, has been singularly corroborated in my recent tour of the principal eastern and southern ports of England.

Report on the
Systematic Super-
vision of Steamers.

From the combined opportunities, our enrolment of initiated and volunteer surveyors stands thus :

Bristol :—Mr. B. H. N. Green, Mr. James Wood, Mr. W. Patterson.
 Liverpool :—Mr. John Grantham, Mr. Thomas Vernon, Mr. John Dawson,
 Mr. Douglas Hebson, Mr. Charles Grayson, Mr. J. Wilson Green.
 Greenock :—Mr. Walter Douglas, Mr. J. B. Cumming.
 Leith :—Mr. Walter Paton, Mr. William Chiene.
 Newcastle :—Mr. Richard Hopper, Mr. Ambrose Hopper, Mr. Robert
 Fulton, Mr. Simon Danson.
 Gateshead :—Mr. James Laing.
 North Shields :—Mr. M. Popplewell.
 Sunderland :—Mr. J. B. Simey, Mr. J. Brunton.
 Hull :—Mr. Edward Gibson, Mr. Joseph Anstick.
 Yarmouth :—Mr. G. Garson, Mr. H. Fellows, Mr. J. W. Branford.
 Ipswich :—Mr. W. R. Mulley.
 Portsmouth :—Mr. John Oakshott, Mr. Henry Cradock.
 Southampton :—Mr. G. P. Rubie.
 Londonderry :—Mr. William Coppin.

A fair criterion is so far afforded of the co-operation to be expected from the local surveyors whose aptitude is what might be expected from a mechanical view of the very lucid diagram and gazetted instructions issued by the Admiralty.

Nevertheless, there are 77 shipwright surveyors to be visited, instructed, and enrolled at the 37 ports of the United Kingdom, yet unnoticed on this subject, ere my Lords can respond to the urging applications of the Board of Admiralty of last June, to the effect "that the Board of Trade would speedily provide the necessary superintendence of steamers' lights."

It was absolutely startling and vexatious to find, as I did, when going the rounds of the docks with the surveyors, the instances of thorough disregard and unblushing ignorance, even to contempt of the officially prescribed and duly promulgated system—a system so easily adopted, and evincing so much solicitude for the mariners' safety, in its painstaking introduction and real adaptation to the great object of averting collisions at sea.

Some parties affect not to know anything about the system or enactments; others recognise both, but doggedly carry their former lights with the regulation lights, so that the latter are confused, if not negatived; some think to circumvent the law by displaying the three stipulated coloured lights, white, green, red, actually and absurdly from one lantern, instead of three distinct lanterns at three different parts of the vessel; others assume, indeed claim exemption, because forsooth, they are only coasters or tugs, and therefore persevere in carrying but one light of any colour, and at any part of the vessel they choose.

Thus, out of the Tyne alone, there are upwards of 100 steamers, whose pursuits more or less take them amongst sea-going vessels, where they become so many stumbling blocks to the better conducted and respectably equipped vessels, for lack of those symbols of mutual guidance which the Government regulation designs, or reckless of the consequences to life and property, the law and its penalties, because there is no local check and infliction for infraction.

It is this small class of steamers that jeopardise safety, an instance of which I had the honour to report upon in detail on the 16th ultimo; not one should be excused from periodical survey; the ships they tow in and out of port, the passengers, mail bags, and treasure which at any moment they convey, are depending on their worthiness of hull and machinery.

Having so recently portrayed to the mind's eye of their Lordships the fatal consequences of so much misrule amongst our mercantile steamers, it would be supererogatory were I to quote further from my ample notes on this occasion, beyond the following instance of misapprehension in a quarter which should, by prompt and scrupulous observance of all matters concerning maritime safety, present an example, viz. the steamer belonging to the Commissioners for

Report on the
Systematic Super-
vision of Steamers.

Northern Lights. It transpired at Leith on the 26th ultimo, that some of the masters of the steamers at that port, expressed a belief in respect to lights,

“That it was merely optional to exhibit them; and the master of the said Commissioners’ steamer “Pharos” joined in such belief, adding that Mr. Alan Stevenson, when last in London, inquired, as the engineer of the Commissioners, at the Board of Trade, and was informed that the Bill had not passed; and that in consequence, he had given up using the said lights, and sent them ashore.”

It is difficult to reconcile such a view of matters with the fact of the Bill on which compulsion depends, passed in 1846, that the system determined on by the Admiralty, was set forth in December 1847, in the form of an initiatory diagram; and gazetted for absolute operation on and after the 21st of July 1848. Such however goes to urge, that not a moment should be lost in rendering the enacted equipment of steamers matter of supervision, and embodying such with the surveyors’ declarations; but then some fresh force must be organized to ensure that observance of survey and declaration, which was so wholesomely intended, but is so lamentably eluded or abused, as to only bring one-half of the steamers of the United Kingdom under survey in this, the 4th year of the said Act; and when it is considered that the moiety which so rove at large numbers 500 under one pretence and another, and that in the 18 reports which I have had the honour to present to their Lordships, upwards of 44 suggestions for averting ascertained causes of disaster have arisen, and whereon I anticipate that the Right honourable President, Mr. Labouchere, will see additional reason to remodel the existing Acts, as he contemplated last session; yet as my recent mission threw me into such intimate knowledge of the actual practices at the outports, and the sentiments of the approved surveyors, I should consider the order to communicate with them, with a view to their services being further availed of, but half realised, if I had not gathered such information as might strengthen the application for a amended Steam Navigation Act, whereby our mercantile steam fleet of 1,008 vessels, exclusive of 102 mail steamers, shall be as essentially superintended as our railroads are, and its capabilities referred to at any given moment in the spirit of the resolution of the Select Committee on our Steam Navy last session; viz.—

“That the prompt development of the whole available maritime resources of the country, in the event of threatened hostilities, is most desirable.”

A record of which, and half-yearly condition, would be combined with that supervision for passenger safety and commercial traffic so necessary to public confidence, and which, as far as it has gone, has incited most beneficial circum-spection, insomuch that the amount of casualties has been less frequent by one-half, compared with three years ago.

Such, I venture to assert may be effected to a degree of perfection, and pay for itself, in the following way.

There are 1,008 steamers that ought to be surveyed twice a-year, and after any accident, in regard to worthiness of hull and machinery, and proper equipments.

Supposing each to pay for their certificates a certain sum to the account of the Board of Trade, at the several Custom-houses on receiving their certificates, instead of paying variable fees to the surveyors; and that the surveyors were paid a certain sum through the local Custom-house, for every declaration of survey which they transmitted to the Board; we have then a scale of income and disbursement of the following range, according to present returns. The classification of the 1,008 steamers stands thus:—

1. Not exceeding 100 tons	-	-	-	-	-	-	-	529
2. Exceeding 100, and not above 250 tons	-	-	-	-	-	-	-	272
3. Above 250, and not exceeding 400 tons	-	-	-	-	-	-	-	136
4. Above 400, and not exceeding 600 tons	-	-	-	-	-	-	-	71
								<hr/> 1,008 <hr/>

The

	£.
The 529 at 1 <i>l.</i> 1 <i>s.</i> , for half-yearly certificate - -	1,110 per annum.
The 272 at 1 <i>l.</i> 11 <i>s.</i> 6 <i>d.</i> „ - -	856 „
The 136 at 2 <i>l.</i> 2 <i>s.</i> „ - -	571 „
The 71 at 3 <i>l.</i> 3 <i>s.</i> „ - -	447 „
	<hr/>
Annual amount of receipts - - -	£.2,984

Allowing the surveyors, of whom there will be two, a shipwright and an engineer, for each survey and declaration, 10*s.* 6*d.*, *i.e.*
1*l.* 1*s.* per surveyor per vessel per annum - - - £.2,116

Leaving for the inspector's salary and contingent expenses - - £.868

Then, if the surveyors are reduced in number to one-half, that is, from 189 to 94, and which experience recommends, their average receipts will be increased, and be derived from a less precarious and compromising course of business than hitherto, for whilst decreasing the recipients, the source of business, viz. "surveys and declarations," will be henceforth doubled.

Besides a means of purifying the present system of surveys, which in the absence of any regular Parliamentary estimate such a source of funds will confer, a permanent inspector, instead of an occasional one as at present, could be appointed, to be a constant channel of reference and appeal between the surveyors or owners and the Board, and to be so clothed with authority as to proceed to the scene of any steam vessel accident at once. It is found very inconvenient to have to make out a new commission on each occasion. The accident is not reported for an indefinite time; till it is reported nothing can be done; then some time is lost in considering whether the case is worth inquiring into; then a commission is made out, and by the time the inspector arrives on the spot, many important witnesses are out of reach, &c.

It is to the absence of any regular appropriation of funds to this service, and the routine of formalities, that is to be ascribed the non-investigation of two-thirds of the accidents which have occurred.

Much as my own and sole working of the Steam Navigation Acts, since they came into operation, as respects their out-door application, had impressed me with the foregoing views, it is satisfactory at a juncture when I ought to submit them to you, sir, for urging a remodelling of the Acts in question on the attention of the Right honourable President, Mr. Labouchere, that in my recent contact with the surveyors, I should have elicited the strong and corroborative statements regarding the material points as obtained at the several ports, without the possibility of one port's surveyor consulting with another.

The three queries which I closed all my discussions with, were,

"How have you found the Acts to work, and what does your experience suggest for the purer working of them?"

"Do any steamers elude survey, and from what causes?"

"From your knowledge of the practice of steam tugs, ought they to be exempted or not?"

The substance of their replies stands thus:

The owners of steamers have the choice of too many surveyors at one port.

When one surveyor has pointed out certain defects, another surveyor (perhaps one passing through of another port) is sometimes called in, who, as the surveyors do not commune with each other, gives the certificate which the first surveyor (who has watched the defects) refused.

The surveyors cannot at present put a question to owners about a survey unless invited; it is deemed intrusive, and treated as such. A surveyor cannot require a vessel's bottom to be seen, his judgment of her worthiness depends on internal survey; hence he may innocently certify a vessel, whose keel, bilge, forefoot, or stern-post may be injured.

The system of owners selecting a surveyor, and the surveyor's fees depending on the owners, is fraught with evil to the public service. Surveyors should be enlisted in this service as having a common cause in hand, giving united vigilance and judgment, and dividing the fees accruing from the declarations.

Most of the river and small coasting steamers assume that the Acts do not apply to them, and this they do with impunity, because excused from regular clearances at the Custom-house.

Sometimes such vessels obtain an engagement to convey from port to port an unlimited number of passengers, when having the fear of a penalty, they call for a survey at the last hour, which is obviously a mockery. It is notorious that many steamers would not stand the test of a survey, and yet as tugs and passage vessels they run all risks, and as to detection and penalty, they know it is no one's business at present to look into it.

Some parties plead the expense of survey as being more than they can afford, forgetting how little able that argues them to be to keep their vessel in safe repair, and hence how a confiding public may be deceived, and accident ensue, whilst all steamers are supposed to be to a degree guaranteed by official inspection.

Ostensibly, steam tugs are at every turn of their vocation identified with risk to life and property, and therefore ought to be rigidly surveyed. They convey passengers, mail bags, and treasure between ships and the harbours when tide-bound, and every ship in tow depends on the worthiness of hull and machinery of the tug, more particularly a departing ship who is tracked along the weather side of the bars and banks on our coasts, with an unorganized crew, and tackling scarcely in place, &c. Exemption on any grounds is open to abuse; parties are known to attempt the franking of all their steamers, say a dozen, by putting the mails they contract to carry on board of each vessel if only once in a season, in order to bring them under the exemption of mail packet, although only three or four were really necessary for that duty.

The surveyors under the Board of Trade, and the tide-surveyors of the Custom-Houses, should be empowered to demand a sight of every steamer's certificate, which certificate should certify the lights and other enacted equipments, as well as number of passengers allowed. If a steamer is known to have run aground, or met with a collision, local power should be given to withdraw the existing certificate, and the vessel interdicted from proceeding to sea until repaired to the satisfaction of the surveyors, and so declared as worthy a new certificate from the Board of Trade.

In conclusion, it is to be remarked, that several powerful steamers, ostensibly of British ownership, are hailing from foreign ports, and hence do not recognise the Acts in question. It would seem, however, a point worthy of international understanding, that our system of steamers' lights should be adopted by all. This would apply to the denoting lights of sailing vessels also, which it is earnestly hoped may forthwith be made compulsory for sailing vessels to display, without which reciprocation only a moiety of our anxiety to avert collisions at sea or anywhere afloat will be provided for. All that is desired of a sailing vessel is, that she should show a good plain light to vessels right ahead or astern, a green light when on the starboard, or a red light when on the port side.

I have, &c.

Sir Denis Le Marchant, Bart.
&c. &c. &c.

(signed) *H. M. Denham,*
Captain, R.N.

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STEAM VESSELS "SIRIUS," &c.

COPY of the **REPORTS** of the Board of Trade Inspector on the Loss of the Steamers "Sirius," "Tribune," and "Finn MacCull;" of the "Orion;" of the "Dumbarton Castle," and of the "Royal Victoria:"—Also **REPORTS** on the necessity of "Supervision of Steamers' Lights," and on the "Systematic Supervision of Steamers."

(Mr. Hume.)

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